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THE DATASETTING EFFECT OF LEARNING FACT FROM VIEWING FICTION

Toward an on-line processing model of television effects

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Abstract

Previous research has shown that people appear to use television fiction memories when asked to make a judgment about social reality. It has been argued that such memory based judgment occurs because people mislabel fictitious memories or because they do not take information about source validity into account. This study argues that fiction contains cues which tell some viewers that some of what they see resembles reality. In that case a viewer makes an on-line, stimulus based judgment and learns a fact while watching fiction. This was called the data setting effect. In a sample of 501 Flemish students 29% of thirteen year olds had knowledge about police procedures in the USA which they could only have obtained by watching TV fiction. Knowledge levels increased with age. 74.4% of eighteen year olds possessed the same knowledge. The paper argues, that that the data setting effect is strong and persistent. An "on-line processing model" complements the "heuristic processing model" of L. J. Shrum.

The Datasetting Effect of Learning Fact From Fiction,

Toward an On-line Processing Model of Television Effects

Bandura (2001) remarks that it has long been established that people do not learn about the world through direct experience only. In their much quoted text on the sociology of knowledge Berger and Luckmann (1976, p. 86) refer to "hunter societies" in which hunters pass on experiences to younger members of the tribe by telling stories around a camp fire. Bandura believes that such a "vicarious capability" is central to being human. Humans do not have to learn all that their predecessors or contemporaries know by experiencing it themselves. One can learn through processes such as "symbolic modeling" and other indirect, that is mediated, ways. It has been argued that sociologists and psychologists do not take these processes sufficiently into account as "most psychological theories were cast long before the advent of extraordinary advances in the technology of communication." (Bandura, 2001, p. 271, see also Bandura, 1994; Hogg & Vaughan, 1995).

Vicarious learning may be a self-evident process when it refers to what people learn from documentary genres such as television news or newspaper articles. Whether you discover that traffic rules have changed because a police officer gives you a ticket (direct experience) or because you saw it announced on television (vicarious experience) or because a friend tells you (interpersonal experience) does not make a big difference: in all three cases you get the impression you learn something about reality. An entirely different issue, however, is the question whether watching fictional television entertainment can teach a viewer something about reality. Berger and Luckmann do not seem to have acknowledged that their hunters could have shown younger members of the tribe what kind of behavior is expected from a hunter by telling a totally fictitious story about a "silly" hunter. Such narrative fiction would have told their young audience exactly what the tribe thinks of any hunter displaying such behaviors... Regarding present day media there is a lot of research claiming to support the notion that watching fictional television stories teaches viewers something about the real world. The best known approach to this issue is cultivation theory, developed by George Gerbner and his associates of the Annenberg School for Communication of the University of Pennsylvania. A recent meta-analysis of 5633 findings from several hundred studies in the past 20 years concluded that heavier viewers of television have perceptions and attitudes that reflect the mainstream of what is shown on television more than do light viewers (cf. Morgan & Shanahan, 1997; Shanahan & Morgan, 1999).

The "Off-line" impact of fiction on reality judgments

Amongst supporters of this theory there is a lot of discussion about the mechanism which explains how people learn about the real world by watching fiction. Generally speaking, two explanations have been put forward to explain instances in which people seem to use memories based on exposure to TV fiction as input to form an impression about the real world.

The first explanation is that fiction is sometimes mistaken for fact (e.g., Shapiro & Lang, 1991, p. 698). This perspective sees effects of television fiction on conceptions of reality as a kind of "sleeper effect" in which people remember "event memories", but have forgotten the information about the context (which should tell the individual that the memory is fictional). Effects of fiction, in other words, are seen as a kind of processing error. They are, as Mares (1996) defined them, mislabeled events, as a result of source confusion. The typical findings of cultivation studies appear to be explained by this process: people who are heavier viewers will collect a larger number of mislabeled memories, hence a positive correlation between viewing volume and perceptions of the world as shown on TV. This approach to fiction effects finds a theoretical and empirical base in the source monitoring framework of Johnson and colleagues, who show that source monitoring errors or source misattributions can lead to "false memories" when one memory is mistakenly linked to unrelated but similar memories (Henkel, Franklin, & Johnson, 2000, p. 321).

The second explanation is based on the observation that many of the issues media effects researchers have dealt with regard judgments people do not necessarily think about much. Thus, when asked to estimate a proportion (e.g., the percentage of working men who are police detectives) or a particular risk (e.g., the risk of being attacked in one's own neighborhood) people will not just retrieve an already set perception, they will have to apply some kind of heuristic to produce an estimate on the spot. When forming a judgment about reality people "use the information that is most accessible to form these judgments" (Shrum & O'Guinn, 1993, p. 440). Heavier viewers will find it more easy to imagine a view of reality which reflects the stereotypes they are confronted with through their viewing (cf. also Shrum & Darmani Bischak, 2001, p. 189). Shrum (1997) argues that people often "do not take the time or make the effort to ascertain the source of the information recalled and thus do not source discount" (p. 350), although he stresses that he describes what happens "under heuristic processing conditions" (p.351). Shrum's (2002) heuristic processing model offers a compelling explanation of first order cultivation effects. First order cultivation measures are

estimates of demographic variables, set size or, even more generally, the prevalence of events. Shrum, Burroughs and Rindfleisch (2003) show how well Tversky and Kahneman's (1973) concepts of the availability heuristic and of the simulation heuristic (Kahneman & Tversky, 1982) apply to first order cultivation effects. Kahneman and Tversky have demonstrated that the ease with which people can recall (if they remember examples) or imagine (if relevant memories appear not to be accessible) an event, positively correlates with higher estimates of the prevalence of that event in the social world. As Hastie and Park (1986) summarized it: "The more a subject can remember and the more easily it comes to mind, the higher the estimates of frequency, probability, or responsibility" (p. 258). Shrum and colleagues have shown that television fiction makes more memories available or easier to imagine. Shrum's arguments are compelling because much of the support for his position is derived from experimental settings and is based on a solid theoretical model (for an overview, see, for instance, Shrum, 2002). He found that when people were asked to take into account which source they were using to produce a judgment, subjects were motivated to question the memories they were using and the cultivation effect was moderated (Shrum, 2002, p. 83, 85). This suggests that when people are asked to produce a first order judgment they base their estimates on what comes to mind most easily because they do not worry about the source of their memories. If they are motivated to take the source into account, they seem to realize (at least intuitively) that they are using memories of fictitious stories. "(...) the model implicitly assumes that if heuristic processing leads to the use of television information in the construction of prevalence estimates, and hence produces a cultivation effect, then inducing people to avoid the use of a heuristic processing strategy should eliminate the cultivation effect." (Shrum, 1997, p. 350).

"On-line" effects of television fiction

The first two explanations assume that the effect of television fiction is produced at the retrieval stage. When people are asked about their perception of reality they retrieve memories and use these to construct estimates, judgments, etc. Such constructs are the result of what Hastie and Park (1986) coined memory-based processes (p. 261), in which the input comes from memory. These are opposed to what they call on-line processes, in which the input comes from the external environment. On-line processing occurs when people make a judgment at the time of encoding, or, in other words, as a stimulus is presented or as events occur. Hastie and Park (1986) argue that on-line processing is the rule, while memory based

judgments are the exception, a view supported by Fiske and Taylor's (1991, pp. 328 ff.) overview of social cognition theory.

The observation that memory based processing is the exception, rather than the rule, raises the question whether on-line processing of fiction can result in social reality judgments. The fact that social cognition theorists have shown that "normally people make many judgments spontaneously" (Hastie & Park, 1986, p. 262), does not imply that the same is true of fiction effects. It is entirely possible that Shrum describes the essence of first order cultivation and that an effect of television fiction is possible only "under heuristic processing conditions" (Shrum, 1997, p. 351), when people are insufficiently aware of the source of their memories. Shrum (2002) seems to believe that on-line effects are unlikely to occur, when he writes that "it is counterintuitive that people would perceive a television example (...) as applicable to a judgment about its real-world prevalence" (p. 82), although it has to be noted that he makes the remark only regarding judgments of prevalence. Shapiro and Lang (1991), on the other hand, are more outspoken when they state that "Television entertainment memories would not, in general, be used in deciding what the real world is like because they come from an unreal source" (p. 698).

Some authors have put forward hypotheses suggesting that sometimes viewers knowingly and consciously learn from fiction at the viewing stage. Potter (1993, p. 593) suggested a "sudden insight" effect might occur when people believe they suddenly notice some truth about reality while viewing fiction. These would be instances where people form an impression of what is presented to them during their viewing experience, a possibility put forward by Hawkins, Pingree and Adler (1987) when they wondered:

> Do viewers accumulate a store of learned incidents and characters that can be mined for conclusions about social reality? Or do they form an impression on each social issue right from the start and then continually check it against further viewing? Or do viewers form an overall impression of the television world that provides the base for judgments about the real world? (p. 555).

The remainder of this article will examine whether theoretical and empirical arguments exist to claim that on-line effects of television fiction on the perception of social reality are possible, are likely to occur and have occurred.

An on-line processing model of television fiction effects

Shrum (2002) argues that media effects research is in dire need of process models because so much criticism of the internal validity of its hypotheses exists. Such a process model should provide a clear description of all the steps between a stimulus (a particular aspect of a work of television fiction, in this case) and a response (here, an effect on the perception of social reality). "If these links stand on solid theoretical foundations and are empirically verified, then threats to internal validity such as spuriousness and reverse causality are rendered less plausible" (p. 70). Shrum's own Heuristic Processing Model is a convincing construct which predicts when the effects he describes hold or do not hold. In what follows an attempt will be made to define the propositions necessary to construct a model describing the conditions under which on-line effects of television fiction on a respondent's perception of social reality could take place.

Proposition 1: Television fiction contains information which can be perceived as being factual

Bauer (1992) remarks that fiction viewers expect a high level of "apparent facticity". Fiction which is not perceived as being "realistic" may provoke irritation or rejection. Shanahan and Morgan (1999) see "representational realism" as the "dominant convention" in the way stories are told in Western cultures. They summarize it as "the form of story-telling in which the hearer or viewer is convinced that, if certain assumptions are taken for granted, the events taking place could happen "in reality"." (Shanahan & Morgan, 1999, p. 21; see also McQuail, 2000, p. 352). Several authors have remarked that even cartoons can thus contain lessons about reality (cf. Gerbner, Gross, Morgan, & Signorielli, 1980; Snow, 1983; Potter, 1988; Funkhauser & Shaw, 1990; Shapiro & Chock, 2003). This perspective also finds support in Zillmann's theory of media exemplars (see Zillmann, 1999, 2002; Zillmann & Brosius, 2000) which argues that viewers judge entities and try to generalize them, but that a distinction must be made between features of the exemplar that require interexemplar similarity, and other features that may vary freely (Zillmann, 1999, p. 72). This suggests that part of a fictional exemplar may seem plausible or possible (cf. Wright, Huston, Truglio, Fitch, Smith, & Piemyat, 1995, 1995; Busselle & Greenberg, 2000) even if other features are very unrealistic (as would be the case with a cartoon featuring drawn characters displaying behavior of which it is suggested it is "typical" of a particular population).

Proposition 2: People make an on-line assessment of realism

Few people beyond the age of 11 (see Wright et al., 1995, p. 1707) fail to perceive that television fiction is no "magic window" (cf. Potter, 1988; Busselle & Greenberg, 2000). They realize that television fiction does not show events which are actually happening in the real world. The fact that a program as a whole is labeled as fiction or drama, however, does not have to imply that all its elements are fictitious or, more accurately in the context of the present discussion, are perceived as being fictitious. Television fiction can, and does, display social realism. "One may recognize a portrayal is fictional but similar to real-life events, even if those events are not present in one's own environment." (Busselle & Greenberg, 2000, p. 253). Even if people realize that what they are viewing is not really happening or is not a recording of something that really happened, this does not mean it is impossible to see a reference to reality in it (cf. Meyrowitz, 1979, p. 75). Busselle (2001) and Shapiro and Chock (2003) have showed that people make on-line judgments of realism. Busselle and Greenberg (2000) hypothesize that viewers "make judgments about whether observed events could happen in the real world, labeled possibility, and how likely they are to happen in the real world, labeled probability" (p. 254). Such processes do not occur in every viewer to the same extent. Two explanations for such differences between viewers have been put forward. First, it has been shown that there is a developmental aspect, with young children paying more attention to the idea that "it could happen", while adults are more inclined to take into account whether or not it is "likely to happen" in the real world (Wright et al., 1995, p.1707; see also Busselle & Greenberg, 2000). Nevertheless, "by age 10 or 11, most children comprehend what is fact or fiction on television in about the same way adults do" (Wright et al., 1995, p. 1707). Second, Potter (1988) has put forward the possibility that "some viewers may "see" much more reality in the message than others" (p. 160). There appear to be two explanations for such differences between viewers. First, Newcomb (1978), in his criticism of Gerbner's cultivation theory, remarked that "different members of the mass audience will attach different meanings to the same messages" (p. 280). Media messages are often described as more or less "polysemic", which means that they are open to interpretation (cf. classic studies such as Morley, 1980; Ang, 1985; Liebes & Katz, 1990). What might seem realistic to one person may seem totally unrealistic to another person, not because one is less good at interpreting messages than the other, but simply because both interpret the message differently. McQuail (1994, p. 242) remarks nevertheless that it becomes more difficult to differ in interpretation as messages become more realistic. Second, there may be differences

in the motivation to judge whether or not a particular event is realistic. Busselle and Greenberg (2000, p. 256) refer to uses and gratifications theory to argue that some people may have a personal motivation to try to assess whether a particular media message could teach them something about reality, while others derive no gratification out of it and may therefore pay less attention to the level of realism of a message. It is important to note that such a "motivation to process" differs from Shrum's (2002) use of a similar term. In Shrum's model motivation to process was induced by the researcher by asking subjects to be attentive to sources of information while making judgments (at the retrieval stage). In the present study motivation to process originates in the viewer as a need for a particular kind of gratification during the viewing stage. This is illustrated, for instance, by Boyanowsky (1977) and Boyanowski, Newton and Walster (1974). The authors studied the behavior of girls in two dormitories of a school in which a girl had been murdered. Girls who slept in the same dormitory as the murdered girl started to consume more violent movies than a comparable group that had no direct experience with the crime. The real world experiences of the girls in the first dormitory did not stop the appeal and influence of fiction. Instead they appeared to be motivated to seek out and process all information which might help them to come to terms with what had happened

Proposition 3: Fiction can be perceived as realistic

The fact that certain viewers in certain circumstances assess whether or not a fictional message contains lessons about reality does not automatically imply that at least some viewers come to the conclusion that the fiction they are watching contains lessons about reality. In Shrum's memory based model motivation to process leads to source discounting. An on-line process model would have to show that motivation to process is what causes the learning process. Only if people perceive part of an exemplar as saying something about reality is a learning effect possible during the viewing of fiction.

Potter (1988) has noted that "media content contains cues which alert viewers to the degree of reality in those messages" (p. 36). He seems to have applied this idea to the distinction between news and fiction, but it can be applied more widely. Social realism appears to be created by two sub-processes of what is sometimes referred to as intertextuality (cf. McQuail, 2000, p. 498; Watson & Hill, 2000, p. 317). This is a situation in which one "text" (or media message) refers to another one. On two levels viewers get cues which could give them the impression that fictitious stories they are watching contain lessons about reality. The first process is repetition. If a particular way of presenting a story returns in many

different series, films and other settings, this may suggest to viewers that it must therefore be based on a "prototype". Viewers are likely to infer that the most likely underlying model for the prototype was a real world example.

The second process is what texts other than television fiction tell viewers about the levels of realism in fiction. Most authors appear not to have identified this process so far, possibly by focusing too much on the medium they were studying. Generally the "context" of a program seems to have been defined as those elements of what is shown which alert viewers to the fact that it is fiction. However, there is a much wider context which informs the viewer about the reality level of television fiction. In interviews in various media directors will typically refer to the "research" that went into the making of a series and actors will explain how they went to "boot camp" or on police ride-alongs to learn to portray soldiering or policing in a "realistic" way. Books are sometimes published discussing the extent to which popular series are based on (fictionalized) real events. Thus David Simon's (1991) book "Homicide, a year on the killing streets" was the basis for the series "Homicide, Life on the Streets", which adapted storylines from real events described in the book. David Milch and former New York City Police detective Bill Clark (1995) wrote a book explaining how detective Clark got involved in the development of reality based storylines for "NYPD Blue" and Alan Duncan Ross and medical doctor Harlan Gibbs (1997) discussed in detail whether and to what extent what is shown on "ER" reflects the realities of medical techniques used in the emergency room. More recently the news website of CNN featured retired U.S. Army brigadier general David Grange, who referred to the motion picture "Black Hawk Dawn" as a good example of the kind of situation troops find themselves in when they are involved in urban combat (CNN, 2003). In this example a "real" army general tells viewers that a particular film is "realistic".

In summary, it is clear that viewers are encouraged to perceive elements of television and movie fiction as a depiction of events which could happen in the real world.

Proposition 4: Perceived social realism moderates processing of information

Proposition 4 deals with the question of what is likely to happen when a subject perceives a media message as realistic (bearing in mind that Busselle [2001, p. 47] warns against treating realism as a dichotomous concept instead of a continuum). Shrum has shown that in judging prevalence no cultivation effect occurs when subjects are asked to take the source of their memories into account (cf. Shrum 2002 for an overview). In the heuristic

processing situation the fact that the source of a memory is television fiction, leads to source discounting. Motivation to process ultimately leads to no cultivation effect in Shrum's (2002) model, while absence of motivation to process leads to heuristic processing and thus to a cultivation effect. In on-line processing of fiction motivation to process is likely to lead to the opposite. If a viewer does not perceive any reference to reality in a stimulus, then no conscious or unconscious learning is expected to take place. There is no on-line processing of the stimulus leading to an effect on the perception of social reality. The only way the stimulus can have an effect is through memory based processing, such as described in Shrum's heuristic processing model. If, however, the viewer perceives the stimulus as realistic, then the realistic part of the stimulus is expected to act as an exemplar, which can lead to the formation of schemata. It has been shown, for instance, that "children who perceived television as factual and realistic had real-world schemata similar to TV images" (Wright et al., 1995, p. 1706; see also Huston et al., 1997).

In summary, proposition 4 hypothesizes that if viewers perceive a stimulus as realistic then on-line processing of the stimulus will lead to an effect on the perception of social reality. When the stimulus is not perceived as realistic only memory based effects such as described by Shrum's (2002) model can occur.

On-line learning of schemas or scripts

As McQuail (2000) has remarked, all too often media effects theories start from an underlying transmission model, suggesting that the media "transport" certain perceptions and opinions directly into the heads of receivers. In reality, however, many cognitive processes intervene. As a result the same media message may have a different meaning for different people (cf. the discussion about polysemy). Beck (1994, p. 38) therefore introduces a distinction between data (those stimuli produced by the media and serving as "input" to a "cognitive system", i.e. a person) and information (the end product of the personal and cognitive processing of the data by the media user). When on-line processing of realistic data from fiction occurs viewers either believe that what they see is as it is in reality, in which case they store the data in memory as "facts" about the world, or they do not, in which case no effect occurs. The data in the program differ little from the information ending up in the head of the viewer. Realistic data noticed in fictional representations are likely to operate as exemplars, of which it has been hypothesized that "recipients, as a rule, do nonconsciously infer that the properties observed in a few instances apply to the aggregate of like instances"

(Zillmann, 1999, p. 83). Zillmann argues that it is "this deep-rooted inclination to generalize observed phenomena that gives individual events the status of exemplars" (p. 83). He shows that such processes, which have been demonstrated in face to face communication and direct experience, are equally likely to occur in mediated situations, regarding "our perception and judgment of phenomena and issues with which we have little or no immediate contact" (p. 73). Zillmann and Brosius (2000) show that convincing exemplars lead to the formation of schemas, which they define as "an active structure in memory that connects existing assumptions about how the external world is to be seen and dealt with, as well as how objects, events, and persons are to be classified" (p. 35). Social cognition theorists Fiske and Taylor (1991) defined schemas as "a cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the relations between these attributes" (p. 98).

Learning a fact after viewing fiction can occur as a kind of "sudden insight" (Potter, 1993) after noticing one very convincing exemplar or after noticing the repeated occurrence of exemplars sharing the same essential characteristics. Thus European viewers with no direct experience of Law Enforcement in the United States could start to realize that American police officers in plain clothes can identify themselves as being detectives by displaying a "badge" or "shield". The outcome of the process is likely to be binary in nature: either one remarks and retains a "fact" or one does not. More viewing will thus not necessarily lead to more effect: one can notice other or new facts, but one cannot learn more of the same (Potter, 1993, p. 593; Bonfadelli, 1983, p. 417). All else being equal, one would expect heavier viewers, motivated to process social realism on-line, to learn more facts and/or to develop more elaborate combinations of facts. Thus they develop increasingly complex schemas. People who do not watch a lot of television or are not motivated to notice social reality in fiction might only notice that (on TV and in the movies) in the United States policemen carry badges. Heavier viewers or those more inclined to notice regularities which suggest they reflect reality, might believe they have learned that not only policemen have badges: security guards and some ambulance technicians may also have them. Or, they may believe that detectives are set apart wearing gold shields, or that police officers from New York refer to their badge as their "shield" etc. The schema of the heavier viewer regarding identification badges is more elaborated because he or she has "learned" more facts, but a basic question such as "Do American police officers carry a badge?" would be answered in the same way by both the light and the heavier viewer, given that they had noticed that people presented as police officers in American fiction always seem to have a badge pinned to their uniform

shirts, and believed this to reflect reality. Such a developing-schema-approach is supported by findings that "frequent viewing was not directly related to television-like schemata but was related to perceived social realism which, in turn, predicted schemata" (Wright et al., 1995:1716). This quote suggests that heavy viewing itself does not predict schemata. Whether or not somebody learns about the real world by viewing fiction depends on whether this viewer believes that the stimuli are realistic exemplars. Heavy viewing does, however, have an effect on the perception of those stimuli as being realistic (as hypothesized by the intertextuality-argument above), thus influencing the formation of schemata indirectly. Shrum, Burrought and Rindfleisch (2003), too, hypothesize that judgments formed on-line are not affected by viewing volume as viewing volume only affects heuristic processing. In summary, it is suggested here that more viewing could lead to the formation of more elaborate schemas or the learning of more "facts", but it does not make sense to suggest that a particular fact can be learned "more" or "better".

An interesting example of an on-line processing effect can be found in Simkin, Hawton, Whitehead, Fagg and Eagle (1995) (see also: Hawton, Simkin, Deeks, O'Connor, Keen, Altman, Philo, & Bulstrode, 1999), who analyzed the effects of a single episode of the British Emergency Room series Casualty. The episode showed the effects of an overdose of the painkiller paracetamol (more generally known in the USA as acetaminophen). Instead of the expected and hoped for dissuading effect the researchers found a surprising increase in the number of suicide attempts in which an overdose of the painkiller was used. Even though some have suggested that the study showed methodological inaccuracies (e.g. Pell & Murdoch 1999, Davies et al. 1999), the finding may seem puzzling at first. The distinction between the data offered by television and the interpretation the viewer attaches to it, offers an explanation for what happened. At least part of the viewers seemed to have learned that high doses of paracetamol are potentially deadly. In some viewers, however, this led to an imitation effect. The surprise of the researchers seemed to be the result of an unnecessary generalization of their own interpretation of the television data. The injured viewers did get the message, but drew their own conclusions. These conclusions were not contrary to the message of the television program and were therefore well within the boundaries. The only conclusions not supported by the program would have been ideas suggesting that large doses of paracetamol are harmless or even healthy.

Media fiction may therefore have effects much like those of the agenda setting effect of news, of which Cohen (1963) stated in the sixties that it "may not be successful much of the time in telling people what to think, but it is stunningly successful in telling (people) what

to think about". Gerbner, in his early work on cultivation, expressed a similar view when he noted that a television message "will not necessarily tell us what people think or do. But [it] will tell us what most people think or do something about and in common" (Gerbner, 1970)". In view of Beck's aforementioned ideas on the distinction between data and information on-line learning of facts from viewing fiction is therefore referred to as data setting in the remainder of this article. One example of data setting can be found in Gundry, Comess, DeRook, Jorgenson and Bardy (1999) who reported that untrained sixth-grade children confronted with an Automated External Defibrillator (a device used to detect and treat irregular heart rhythms without the intervention of a medical doctor) expressed surprise when the apparatus' paddles did not resemble those of the hospital defibrillators shown in medical fiction. In a qualitative study Van den Bulck and Vandebosch (2003) showed that people who were sent to prison for the first time had clear expectations (schemata or scripts) of what was likely to happen to them in prison. The first time prisoners, who had no direct experience, realized that they had learned what they knew from (American) television fiction, but the interviews with the inmates clearly suggest that they had made social realism judgments while watching prison fiction by judging whether what they saw was both possible and probable in real life. People embarking upon a criminal career are doubtless motivated to process information regarding prison as this kind of information is of direct importance to them. In the study the fact that the prisoners spontaneously referred to their TV "knowledge" shows that motivation to process causes a data setting effect, which offers support for proposition 4 which hypothesizes that in an on-line processing model motivation to process has an effect opposite to the effect of motivation to process in a heuristic processing situation. A similar situation in which direct experience and relevance appear to prompt motivation to process is reported by Christopher Wanjek (2003) who recounts cases of gang members ending up in hospital with an injured thumb after they tried firing a semi-automatic pistol by holding it in a "tilted" position (with the magazine facing sideways instead of pointing down), a position portrayed as "cool" in films and series.

Is data setting an example of first order cultivation effects?

Data setting refers to the learning of facts from viewing television fiction. This raises the question of the correspondence with or distinction from first order cultivation effects. This question contains two parts. First, is data setting an example of cultivation theory? And second, is it an example of a first order effect?

In their review of two decades of cultivation theory Morgan & Shanahan (1997) explain that the empirical strategy of cultivation research is to assess '(...) the degree to which heavy viewers are more likely to give responses that are demonstrably emphasized in the television world' (p. 11). This operationalization means that the validity of the cultivation hypothesis depends on empirical proof that '(...) television viewing cultivates assumptions about the facts of life that reflect the medium's most recurrent portrayals' (p. 8). In another recent definition Gerbner, Gross, Morgan, Signorielli and Shanahan (2002), for instance, delineate cultivation effects as "the independent contributions television viewing makes to viewer conceptions of social reality" (p. 47). Most definitions of cultivation seem to focus on learning about reality by viewing television, with a special emphasis on the effects of fiction and "storytelling". Judged from that point of view data setting is just one more example of a cognitive process leading to cultivation effects.

The second question is whether data setting is a first order effect. Much cultivation research has looked at more than just perceptions and has included opinions and attitudes as well. This is the earlier mentioned distinction between first order measures of cultivation, referring to a person's perceptions of 'the prevalence of things', and second order measures of cultivation, referring to attitudes and beliefs (Shrum, 1995:404; see also, Hawkins & Pingree, 1981, 1990; Potter, 1991, 1993). The question regarding data setting is whether first order effects are defined in rather general terms as "the "facts" of television and the social world: those aspects of the television world that can be objectively compared to the same aspects of the real world" (Shrum, Burroughs, & Rindfleisch, 2003) or whether they are defined rather more narrowly as "judgments related to the prevalence of particular constructs" (Shrum, Burroughs, & Rindfleisch, 2003). The concept of first order measures seems to be used most often to refer to the latter.

If one accepts that data setting is a cultivation process dealing with the impact of fiction on people's perception of "facts" about the real world, then first order measures can be defined in two ways. An exclusive definition would limit the concept of first order effects to estimates of prevalence. In that case one could argue that there are two types of cultivation effect regarding facts or perceptions: an on-line process, called data setting in this article, and a memory based process, called first order cultivation. However, the distinction between first and second order cultivation was made without reference to the cognitive processes involved. It originated from the need to distinguish between the kinds of measures used to study cultivation. From that point of view both concepts deal with "facts" and demographics as opposed to measures referring to "values, attitudes, and beliefs" (Shrum, Burroughs, &

Rindfleisch, 2003). The second view seems to be closer to the original definitions of a distinction between both "orders" of measures. From that point of view one might state that two kinds of first order cultivation can occur. Either a viewer learns the facts on-line, which is called data setting, or the viewer uses memories to produce an estimate about facts in response to a researcher's questions, which is called heuristic processing.

If one accepts the more parsimonious interpretation of data setting as an on-line form of first order cultivation, the on-line processing model would look as follows (see figure 1).

FIGURE 1 ABOUT HERE

When a stimulus is presented to a viewer in the shape of a televised work of fiction, the first question is whether or not the viewer is motivated to look for cues about reality in the stimulus. If the viewer is not motivated, then no on-line process occurs. In that case the stimulus can only have an effect through memory based processes as described in Shrum's heuristic processing model. If the viewer is motivated the level of social realism of the stimulus is judged. If the stimulus is not perceived as saying something about reality, again only memory based effects through heuristic processing are possible. If, however, the viewer believes the stimulus says something about the real world, the stimulus will act as an exemplar and will play a role in schema formation. The viewer will believe that a fact about reality has been learned.

Research design

This study will attempt to look for evidence of proposition 4 by using a particular feature of the Flemish broadcasting situation. As in many countries television programs produced and first aired in the United States take up a large proportion of what is broadcast in Flanders (Biltereyst, 1991, 1995). In the 90s up to 25 % of television fiction was American (Biltereyst, 1995). In fact, all the crime and police shows studied by Scharrer (2001) in an American context have been shown on Flemish TV. While some believe the dosage may be different in different countries (cf. Blumler, Brynin, & Nossiter, 1986; Von Feilitzen, Strand, Nowak, & Andrén, 1989), it is reasonable to state that Flemish viewers are exposed to a lot of the same fiction American viewers watch. This offers an interesting basis for TV effects research. One problem researchers from the United States have been faced with is the fact that they were trying to assess the impact of fictional, but realistic looking storytelling on people's

perception of their own (i.e. American) society. The present study will 1) ask respondents who have no direct experience with the United States about their knowledge of facts concerning the United States and 2) will ask about facts for which ordinary respondents have no source of information other than television fiction.

Asking about knowledge which a particular group of respondents could only have learned by viewing television fiction solves a basic threat to the internal validity of cultivation theory. Shapiro (1991) remarked that "... it may be difficult in the real world to be sure of the actual source of a communication" (p. 7). The prerequisites of the present study make sure that there can be only one source for any knowledge of real world facts the respondents display.

The facts this study looks at are derived from the American legal system. Some authors have argued that "crime shows may be an important source of knowledge concerning arrest rights" (Carlson, 1985, p. 17). McNeely (1995) believed that "in some ways, the most direct "contact" that most persons have with the criminal justice system is through the "television experience". Gunther (1971), for instance, hypothesized that "There must be millions of people who have learned simply by watching crime dramas in the past few years, that they have the right to remain silent when arrested." Chernikoff Anderson, Knutson, Giles, and Arroyo (2002) discuss a United States Supreme Court case in which one party argues that fictional representations of the Miranda Rights "legitimize the real criminal justice system" (p. 11). A law enforcement officer who "reads a suspect his or her rights" is a common fixture of American audiovisual crime drama. It is a narrative tool which tells the viewer that an officer is lawfully arresting a suspect (as opposed to the countless cases were an officer throws out the book and turns into a self-appointed vigilante). There is a high level of "social realism" in this cliché. As a result of a Supreme Court decision in Miranda v. Arizona in 1966, a person in police custody in the United States of America cannot be interrogated unless that person is given the following warnings (Inbau, Reid, & Buckley, 1986, p 221):

1. You have the right to remain silent
2. Anything you say can and will be used against you in a court of law.
3. You have the right to talk to an attorney and have him present with you while you are being questioned.
4. If you cannot afford to hire an attorney, one will be appointed to represent you before any questioning, if you wish.

While the Miranda Warnings, as they are often called, actually do exist, there are a number of differences between the use made of them in real life and the way in which they are customarily represented in television fiction. The most important difference appears to be the

chronology of procedures. On television and in films suspects are usually read their rights at the time of the arrest. In reality only the State of Louisiana has a constitutional provision requiring that the warnings be given at the time of the arrest (cf. Inbau et al., 1986, p. 281). In the real world it is important that suspects are informed of their rights before they are questioned by the police.

Knowledge of the Miranda Rights might therefore be an excellent vehicle for testing the data setting hypothesis:

1. Flemish constitutional rights are different. There is no danger of overspill from what local, direct experience teaches the respondent.
2. Flemish viewers have no source of knowledge other than television fiction.

It is important to stress the second point. At the time of the study Flemish television did not yet show any American reality-based shows such as "Cops" or "911" which pretend to dramatize or show "real" policing. Neither are American arrest procedures a subject which generally receives attention in non-fiction genres, including the news media. While it is theoretically possible that respondents in this study went to libraries or searched the internet to learn what the implications of the Constitution of the United States of America are for arrestees, it is clear that this is highly unlikely. It is particularly unlikely because the study only looked at 13 to 18 year olds.

The research questions therefore are:

R1. Can respondents recall facts about the real world with which they have only been confronted while they were watching television fiction?

R2. Is there a difference between respondents who are motivated to look for such facts and those who are not?

Because data setting deals with schemata and exemplars it relies on recall and not on judgments of prevalence. Thus it avoids another criticism which has been linked to the results of cultivation research when authors have remarked that "cultivation effects may reflect the tendency of some people to overestimate various quantities. Those who overestimate their chances of victimization also may overestimate their television exposure" (Rubin, Perse, & Taylor, 1988, p.109, see also: Wober & Gunter, 1986, Perse, 1986; Potter, 1986).

Method

Subjects

Fourteen schools were randomly selected from a list of secondary schools in Flanders,

Belgium. Ten of these schools were willing to take part in the study which was presented as an omnibus study on the leisure habits of Flemish youngsters. In each school two classes were randomly selected. In those classes all children were asked to take part. These students were given a questionnaire. 545 students took part. Of these 501 had not been to the United States before and were therefore retained for this study. The questionnaire was long and consisted of many questions regarding several subjects. The questions about the Miranda Warnings appeared in a section about "knowledge about the world". The questions measuring television viewing came later, in a different section claiming to deal with "leisure activities" and were only one of a large number of media and leisure questions. This way the study design attempted to avoid the "demand artifact problems" discussed by, amongst others, Morgan and Shanahan (1997, p. 12). 39.1% of the respondents were boys. Mean age was 15.6 (SD 1.65), there was a slight under representation of younger boys.

Miranda Warnings

The respondents were asked "What are the rights of an arrested person in the United States of America?" The question was open ended but as a kind of cue or hint they were given five, numbered lines on which to write their replies. Coders noted for each of the Warnings (including the fifth, rather superfluous, warning which is often added, such as "you can decide at any time to exercise these rights and not answer any questions or make any statements"), whether the respondent reproduced it (though not necessarily verbatim, as there are many different versions) either in Dutch or in English. Second, the respondents were asked: "When should an arrested person be advised about his or her rights?" Four possible answers were given: (1) at the time of the arrest; (2) before interrogation; (3) after interrogation; (4) in court, before the beginning of the trial.

Television use

For each day of the week the respondents were asked to indicate how much they usually watch television on that day, indicated in hours and minutes. These seven measures were summed to obtain an estimate of weekly viewing.

Motivation to process

The questionnaire, which was designed to study leisure, did not contain explicit measures referring to social reality judgments or motivation to process. One set of variables may, however, serve as an indicator of motivation to process. Respondents were asked to indicate their preference for about fifteen types of television program on an 11 point scale (i.e. they were asked to give those genres a rating between 0 to 10, with higher numbers indicating a bigger preference). Three of these preferences seem to indicate a bigger

motivation to examine facts about law enforcement: 1) preference for police shows; 2) preference for action and adventure and 3) preference for suspense thrillers. It has to be noted that preference variables are very different from viewing behavior variables (cf. Van den Bulck, 1995, p. 159 ff for an overview). They do not predict actual viewing very well because there are many structural influences on actual viewing behavior. Preference is, however, an indicator of attention.

Controls

Controls included demographic variables such as age, level of education and gender.

Debriefing of respondents

Once the questionnaire was handed back by all respondents a verbal debriefing informed them of the true purpose of the survey, including the purpose of the questions about the Miranda rights. None reported ever having been arrested in the United States or having any other form of direct experience with the subject. Also, none of them remembered ever having read a book or seen a documentary on the workings and procedures of American Law Enforcement. Film and television fiction thus appear to be the only source of knowledge regarding this issue.

Results

Knowledge of the Miranda Warnings

Table 1 shows which percentage of each age group was able to quote which of the Miranda Warnings. Table 2 shows the sum of correct warnings by age group.

TABLE 1 ABOUT HERE

TABLE 2 ABOUT HERE

A little less than a third of the youngest children were able to quote at least one of the Miranda Warnings. Knowledge seemed to increase by age, with about three quarters of the eighteen year olds able to reproduce at least one Warning. Table 1 shows that not all warnings are equally well known. The first three are mentioned most often. Remarkably there is no significant difference between boys and girls for any of the variables with one small exception: overall 15% of the boys knew the fourth warning, while only 1 percent of the girls did so (t 3.047; df 305,193; $p<.003$). Across all ages 44.3% were unable to quote any of the

rights. The majority of those who did know any of the warnings knew more than one: only 10.9% of all respondents only had one right answer, while 44.8% knew two or more. Only 1.4% of the respondents knew all five.

When are the rights read?

As Table 3 shows most respondents believe the Miranda Warnings should be given when the suspect is being arrested. Interestingly, this "TV answer" is given more often in older groups. In the eighteen year old group just 1.2% of the respondents did not believe the warnings have to be given at the time of the arrest. Incidentally all 1.2% gave the "correct" answer.

TABLE 3 ABOUT HERE

Relationship with TV viewing volume and preference

Mean overall viewing volume was 16 hours and 59 minutes (SD 9 hours and 36 minutes). Table 4 shows that fourteen year olds watch more than thirteen year olds, but that from the age of fifteen viewing volume start to decrease. A principal components factor analysis showed that preference for police shows (factor loading .761), for action and adventure (factor loading .737) and for thrillers (factor loading .706) all loaded high on one factor, even though Cronbach's alpha was rather low (Eigenvalue, 1.620; explained variance 54.0 %; Cronbach's alpha, .58). Factor scores were saved in a standardize form to create a new variable for "TV preferences" of which the mean was zero and the standard deviation was one.

TABLE 4 ABOUT HERE

Table 5 shows the results of a General Linear Model analysis in which level of education, gender and age were entered as control variables and overall TV viewing and preference for genres paying more than average attention to the kind of social realism this study was looking at were entered as explanatory variables. The dependent variable was the number of Miranda Warnings the respondents recalled. The model passed Levene's test of the equality of error variances, a goodness-of-fit diagnostic of the validity of the model ($F=1.530$; $df=5,470$; $P=0.179$). The model was significant at the $P<.0001$ level ($F=12.533$;

df=6,469; R^2=0.14). Overall TV viewing volume was not significantly related to knowledge of the Miranda Rights, but preference for action and police drama was significantly related to better knowledge of the rights. Table 6 shows the results of a Logistic Regression analysis in which whether or not the respondent knew at least one of the Rights was the dependent variable. The model passed the Hosmer and Lemeshow Test (X^2=6.328; df=8; P=0.611). The estimated Cox & Snell R^2 was 0.125, the Nagelkerke estimate of R^2 was 0.168. In this model, too, total viewing was not related to the variable measuring whether or not the respondent knew at least one of the Miranda rights, while a preference for action and police drama was related. Finally, table 7 shows the results of a Logistic Regression in which a variable measuring whether or not the respondent felt that Miranda Rights have to be read at the time of arrest was the dependent variable. The model passed the Hosmer and Lemeshow Test (X^2=7.611; df=8; P=0.472). The estimated Cox & Snell R^2 was 0.060, the Nagelkerke estimate of R^2 was 0.107. In this model, too, total viewing was not related to the variable measuring whether or not the respondent knew at least one of the Miranda rights. A preference for action and police drama was borderline significant (P=0.068).

TABLE 5 ABOUT HERE

TABLE 6 ABOUT HERE

TABLE 7 ABOUT HERE

Discussion

A traditional analysis of these data would at best have revealed a "small but weak" relationship between viewing volume and knowledge of the Miranda Warnings. There would have been no evidence of a cultivation effect by looking at viewing volume and a weak one by looking at preferences for crime and action drama, which, to some, is a violation of one of the basic assumptions of cultivation research. A look at the simple frequencies, however, reveals an entirely different picture. About a third of the youngest and about three quarters of the eldest respondents knew at least one of the Miranda Warnings, knowledge which a Flemish youngster in ordinary circumstances will only be exposed to by viewing television fiction. The large discrepancy between conclusions based on statistical analyses and those based on examining the frequencies is explained by the distinction between on-line processes and memory based processes. Most studies of first order cultivation have used variables and analytical approaches which tap into memory based processes. L. J. Shrum has given this

approach a theoretical foundation by describing what happens in a heuristic processing model. When people are asked to give an estimate about events they do not think about much then what is remembered most easily will influence the estimate most. Shrum shows that the mainstream of television drama offers consistent images which are remembered easily and thus influence the estimates people give considerably. Memory based processes are, as it were, off-line. The present study looked at on-line or stimulus based processes. On-line processing occurs when people process stimuli as they are being presented to them. Viewers motivated to look for clues about the real world make motivated decisions to look for social realism in fiction. If stimuli look plausible and probable they may be retained as a "fact" learned about the real world. It has been predicted that viewing volume will not affect this kind of process much. This suggests that a correlational, or linear additive approach to cultivation effects is unsuitable for studying on-line processing effects.

The present article suggests that on-line processing leads to schema formation. Viewers who believe they are getting information about the real world by viewing fiction learn "facts". More viewing does not lead to learning more of the same, but can lead to learning more facts. The longer a motivated viewer watches, the more elaborate the schema will become. Thus about forty percent of Flemish secondary school children have learned from television fiction that an arrestee has the right to remain silent in the United States. More viewing cannot lead to better learning of that fact, even though it remains a possibility that constant repetition keeps the knowledge active. This does not mean, however, that viewing volume is expected to influence recall. Cultivation theory teaches us that TV viewers are exposed to a particular message system which constantly repeats a particular view of the world. Virtually everyone who watches a minimum of television can therefore be expected to be reminded of whatever fact they believe to have learned on a fairly regular basis. More viewing leads to learning more facts, which is shown by the fact that viewers gradually learn not only the Miranda Rights, but also television's version of when arrestees are informed of those rights. This variable served two purposes. First, it shows that schemas generally become more elaborate and complex. The fact that 71 % of the 13 year olds knew the television answer, but only about 30 % of them could recall at least one of the rights suggests that the fact that rights are read at the time of the arrest is the first fact viewers learn. Which rights they learn is probably an elaboration they learn after more viewing. Second, the variable serves as a conceptual control variable. It offers more evidence that respondents had learned their Miranda Rights from television fiction. On TV rights are read at the time of arrest as opposed to what happens in reality in most states.

Following the example of L. J. Shrum, who developed an elaborate model of heuristic processing, this article suggested what an on-line processing model for learning facts by viewing fiction might look like. It argued that fiction contains lessons about reality and that viewers are equipped to notice references to social reality in fiction. This processing of the level of social realism in a work of television fiction is an on-line process in itself. Some viewers are motivated to process the realism level of fiction, which is explained by Uses and Gratification theory. Some may have informational needs (e.g. when trying to cope with a particular situation people may turn even to fiction to try to deal with it) others may just have an interest in a particular type of issue (e.g. a fascination for U.S. Law Enforcement). Motivated viewers will make an on-line judgment of social realism. If a particular stimulus seems plausible and/or probable it may be retained as a fact learned about the real world. This motivation to process is such a strong influence that, contrary to expectation, it left a trace in the statistical analyses. Even though viewing volume was not expected to influence schema formation, the tentative measure used to assess motivation to process (measured as preference for action and crime drama) was significantly related to recalling more facts about the real world.

The findings of this article are not in opposition to Shrum's findings on off-line processing. In fact, it is argued that they complete the picture. The on-line processing model describes what happens when viewers make an on-line judgment regarding what is said about the real world in fiction. When they are not motivated to notice any facts or when they do not believe that what they are viewing is particularly realistic, then no facts are learned during the viewing process. In those cases Shrum's heuristic processing model explains what happens next. Television fiction can still influence social reality judgments, but only through memory based processes.

Because it is argued here that on-line processing leads to recalling discrete facts about the world, the term "data setting" was introduced. If people believe they learn a fact about the real world they will retain that fact in memory, as part of a schema. The data in the program are what is processed and remembered by the viewer. What ends up in the head of the viewer is exactly what the viewer believes to have noticed. This is opposed to what happens in off-line processing, where viewers apply a heuristic to develop an estimate. As Bouwman (1987) remarked, people do not have risk ratio's in their heads, they develop them when asked to produce them. In on-line processes viewers may attach very particular and individual interpretations to the data, as appears to be shown by the paracetamol (acetaminophen) poisoning case, but the fact that is learned is the fact that was presented. The similarity of this

process with Agenda Setting is what prompted the use of the term Data Setting.

It is argued here that data setting is an example of a first order cultivation effect. It is a cultivation effect because it describes instances where television fiction influences people's perception of the real world. It is an example of a first order effect because it deals with the perception of facts which are observable in the real world. This means that there are two kinds of first order effect. There is an on-line first order cultivation effect which occurs when on-line processing of fiction leads to data setting. There is a memory based cultivation effect when memory based processing leads to the application of the availability or similarity heuristic, as Shrum describes.

In the societies most studied by cultivation researchers virtually all people watch a fair amount of television. It is therefore possible that the distinction between light and heavy viewers no longer makes much sense: it is impossible for most people to escape being exposed to a minimal amount of the television mainstream. To cultivation researchers this explains why correlations between viewing volume and effect cannot be expected to be very high (e.g., Morgan & Shanahan, 1997, p. 33). Similarly Rosengren (1994) remarked that studies of television fiction's effect usually do not refer to an event (the "effect") which took place during recent viewing behavior, but to the cumulative effect of decades of TV viewing. If, as is often suggested, virtually all twelve year olds have literally seen tens of thousands of fictional murders (cf. Weimann 2000, p. 94), then whether some twelve year olds watch twice as much TV as some other twelve year olds is probably less relevant than the fact that virtually all of them have had several years of exposure.

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Figure 1

Flow diagram of the on-line process model of data setting effects of television fiction. Circles represent mental processes. The box called "heuristic processing" refers to Shrum's (2002) memory based process model.

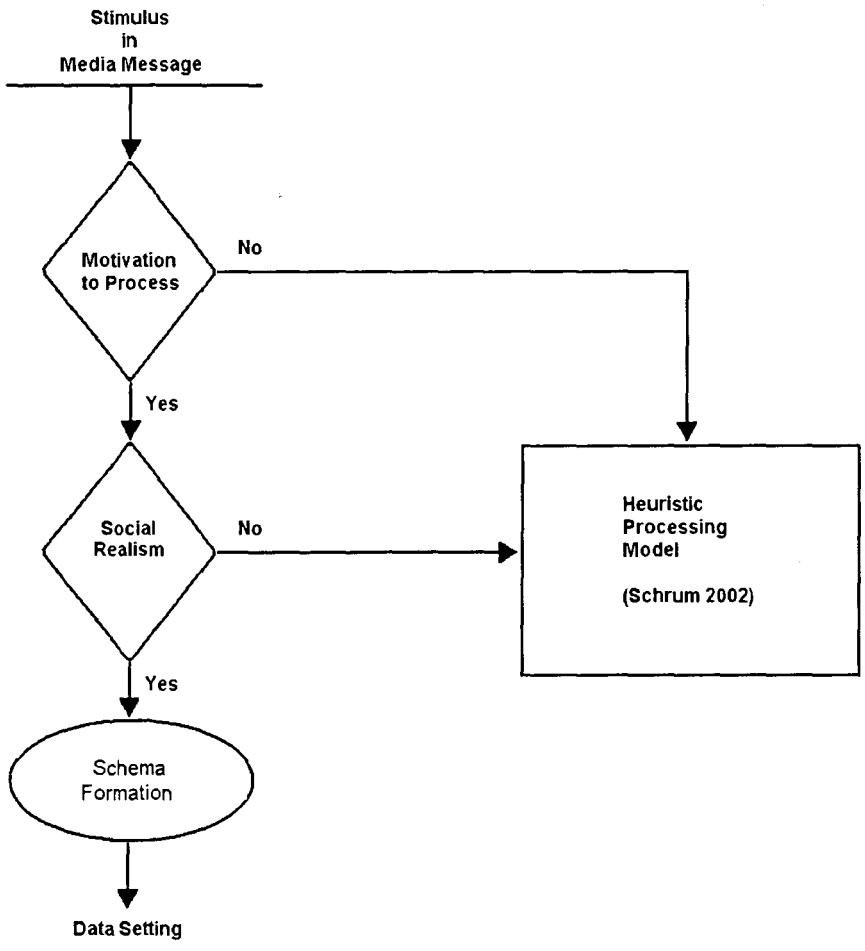

Table 1

Percentage of Respondents Who Can List a Miranda Warning

		Age					
	Total[a]	13	14	15	16	17	18
1. Right to remain silent	41.8	21.1	26.0	37.6	39.3	57.5	62.8
2. Will be used against you	35.0	20.9	27.3	37.2	34.8	53.7	41.9
3. Right to an attorney	43.6	16.7	24.7	39.8	49.4	54.0	68.6
4. Provided for free	9.5	3.0	6.5	9.7	6.8	14.9	14.0
5. Invoke rights anytime	3.0	0	2.6	1.1	2.2	8.0	3.5
n[b]	501	68	77	94	89	87	86

Note: Percentage respondents in each group who give this answer

[a] Across all age groups

[b] Number of respondents

Table 2

Number of Warnings Quoted Correctly By Respondents

		Age					
	Total[a]	13	14	15	16	17	18
Knows 0	44.3	70.8	61.0	47.3	38.6	31.0	25.6
Knows 1	10.9	10.8	10.4	13.2	17.0	6.9	7.0
Knows 2	21.7	9.2	13.0	17.6	22.7	34.5	29.1
Knows 3	16.6	6.2	11.7	14.3	15.9	13.8	29.1
Knows 4	6.1	3.1	3.9	7.7	4.5	8.0	8.1
Knows all 5	1.4	0	0	0	1.1	5.7	1.2
Knows at least 1	55.7	29.2	39.0	52.7	61.4	69.0	74.4

Note: percentage respondents in each group who have this many correct answers

[a] Across all age groups

Table 3

When Are the Miranda Warnings Read?

		Age					
	Total[a]	13	14	15	16	17	18
Time of arrest	84.7	71.2	83.6	79.5	82.9	86.6	98.8
Before questioning	7.8	9.6	4.9	12.3	6.6	12.2	1.2
After questioning	3.8	5.8	4.9	6.8	6.6	0	
Before court case	3.8	13.5	6.6	1.4	3.9	1.2	

Note: Percentage respondents in each group who give this answer

[a] Across all age groups

Table 4

Average Weekly Viewing in Minutes by Age

Age	M	SD
13	1080	546
14	1331	725
15	1019	549
16	998	497
17	913	538
18	814	467
All respondents	1019	576

Table 5

General Linear Model: Dependent Variable: of Sum of Number of Miranda Rights Recalled

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	129,905	6	21,651	12,533	,000	,138
Intercept	54,371	1	54,371	31,474	,000	,063
Level of ecucation	22,454	2	11,227	6,499	,002	,027
Gender	1,073E-02	1	1,073E-02	,006	,937	,000
Age	102,578	1	102,578	59,379	,000	,112
TV preference	12,947	1	12,947	7,495	,006	,016
Total viewing	5,500E-02	1	5,500E-02	,032	,858	,000
Error	810,204	469	1,728			
Total	1806,000	476				
Corrected Total	940,109	475				

R Squared = ,138 (Adjusted R Squared = ,127)

Table 6

Logistic Regression: Dependent Variable: Respondent Recalls at Least One of the Miranda Rights

	B	S.E.	Wald	df	Sig.	Exp(B)
Level of education			6,521	2	,038	
L. of educ. (1)	,621	,269	5,340	1	,021	1,861
L. of educ. (2)	,691	,295	5,471	1	,019	1,995
Gender (1)	-,257	,224	1,322	1	,250	,773
Age	,471	,067	49,442	1	,000	1,602
Total viewing	-,017	,012	2,022	1	,155	,983
TV preference	,363	,110	10,819	1	,001	1,437
Constant	-7,214	1,070	45,437	1	,000	,001

Table 7

Logistic Regression: Dependent Variable: When Should the Miranda Rights be Read

	B	S.E.	Wald	df	Sig.	Exp(B)
Level of education			6,948	2	,031	
L. of educ. (1)	,891	,378	5,567	1	,018	2,438
L. of educ. (2)	,997	,422	5,586	1	,018	2,711
Gender (1)	-,445	,318	1,960	1	,162	,641
Age	,415	,097	18,399	1	,000	1,514
Total viewing	-,009	,017	,263	1	,608	,991
TV preference	,278	,152	3,327	1	,068	1,321
Constant	-4,999	1,530	10,670	1	,001	,007