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The Influence of Television on Children's Daydreaming Styles: A 1-Year Panel Study

The study was designed to establish the longitudinal relationships between the frequency with which children watch violent and nonviolent dramatic programs and three types of daydreaming styles: positive-intense, aggressive-heroic, and dyshoric. A sample of Dutch children (N = 744) was surveyed when they were in grades 3 and 5 and resurveyed 1 year later. Results indicate that children's daydreaming styles in Year 1 did not affect their television viewing in Year 2. However, television viewing in Year 1 did influence children's daydreaming in Year 2. Whereas earlier studies provided only evidence that certain types of television content can stimulate daydreaming about themes that correspond to that content, the present study provides indications that television programs can also repress daydreaming. A positive-intense daydreaming style was found to be stimulated by watching nonviolent children's programs and to be inhibited by watching violent dramatic programs. An aggressive-heroic daydreaming style was stimulated by watching violent dramatic programs and inhibited by watching nonviolent programs.

The past two decades have witnessed a considerable increase in empirical studies of television's influence on children's cognitive skills such as reading, attention, comprehension, and creativity. However, researchers have as yet paid relatively little attention to television's impact on daydreaming. This lack of research attention is remarkable in two respects. First, there is no cognitive activity as ubiquitous as daydreaming. It has been found that people spend on average about half of their mental activity on some kind of daydreaming (Klinger, 1990). Second, observers agree that daydreaming is a prerequisite for normal cognitive and intellectual development (Giambra, 

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1974; Klinger, 1990; Singer, 1975). During daydreaming, children get the opportunity to work over, recombine, and reorganize information; to rehearse their experiences; and to explore their behavioral options for the future (Klinger, 1971, 1990). Because children practice in their daydreams the actions they may take later (Klinger, 1990), daydreaming can have important consequences for their behavior. It has been shown, for example, that recurrent vengeful daydreaming can increase anger (Klinger, 1990) and that daydreaming about violence can stimulate aggression (e.g., Leyens, 1977).

Researchers have advanced contradictory hypotheses about the influence of television on daydreaming. The reduction hypothesis postulates that television has a number of structural characteristics, such as the medium's visual nature and rapid pacing, that inhibit children's daydreaming. In particular, it has been proposed that television has a reductive effect on daydreaming because (a) unlike verbal media, television presents children with ready-made images and thus does not provide them with practice in generating their own visual images (Singer, 1980); (b) television presents fantasies produced by others that can be consumed with little mental effort, leading to a passive "let you entertain me" attitude (Singer, Singer, & Rapaczynski, 1984); and (c) television's rapid tempo allows children no time to daydream while watching (Singer & Singer, 1981). However, as yet there is no empirical evidence to suggest that television viewing hinders children's daydreaming; none of the studies that have been conducted, whether correlational or experimental, has yielded evidence of negative relationships between children's television viewing and daydreaming (for a review, see Valkenburg & van der Voort, 1994). The reduction hypothesis can also be questioned on conceptual grounds. First, it is doubtful that television hinders children's practice in forming their own visual images because there are so many other activities in which children frequently engage, such as talking, listening, writing, and reading, during which they can practice calling up visual images that match verbal messages. Second, there is no reason to assume that daydreaming is impaired by a reduced willingness to invest mental effort because daydreaming does not require a high amount of mental effort (Klinger, 1990). Third, it is doubtful that television displaces daydreaming due to its rapid pace because viewers are easily able to combine television viewing with daydreaming (Valkenburg & van der Voort, 1994).

In contrast to the reduction hypothesis, the stimulation hypothesis postulates that television viewing can encourage specific types of daydreaming through program content. In this view, viewers who frequently watch certain types of television content tend to daydream more frequently about themes that correspond to that content (McIwraith & Schallow, 1983). The stimula-
tion hypothesis predicts, for example, that frequent viewing of violent pro-
grams results in increased aggressive and heroic daydreaming (e.g.,
Huesmann & Eron, 1986). The stimulation hypothesis is based on the
observation that children's experiences can give rise to daydreams about
corresponding themes. A series of studies has shown that environmental
stimuli can evoke daydreams, especially when these stimuli stir our emotions
or correspond to our current concerns (Klinger, 1990). Because television
forms an important part of children's everyday environment and because
television has a great potential to arouse us emotionally (Cantor, 1991;
Zillmann, 1991), it seems likely that television viewing stimulates daydreaming.
The stimulation hypothesis has been investigated mainly in cross-sectional
correlational research. Positive relationships have been found between
television violence viewing and aggressive daydreaming (Sheehan, 1986;
Viener & Paajanen, 1992), heroic daydreaming (Huesmann & Eron, 1986),
scary daydreaming (Viemer & Paajanen, 1992), and the so-called dysphoric-aggressive
daydreaming style (McIlwraith & Schallow, 1983), which is char-
acterized by daydreaming about unpleasant events and acts of aggression.

Although the cross-sectional findings are consistent with the stimulation
hypothesis, they do not permit conclusions about the causal direction of the
relationship between television viewing and daydreaming. The causal direc-
tion of the relationship between television exposure and daydreaming was
investigated in a 2-year panel study by Valkenburg, Vooijs, van der Voort,
and Wiegman (1992). In agreement with the stimulation hypothesis, Valkenburg
et al. found that watching nonviolent children's programs stimulated over
time a positive-intense daydreaming style, characterized by vivid, pleasant,
and childlike daydreams. In addition, watching violent fantasy programs,
and to a lesser extent watching violent realistic programs, appeared to
stimulate an aggressive-heroic daydreaming style, defined by aggressive and
heroic daydreaming themes. However, contrary to expectations, nonviolent
dramatic programs also had a positive longitudinal effect on aggressive-
heroic daydreaming, but this effect was smaller than that found for both
violent program types. According to Valkenburg et al., the latter effect could
be understood if the structure of children's viewing behavior were taken into
account. They argued that because the nonviolent and violent adults' pro-
grams occupied a common principal components factor, it was not possible to
distinguish the separate effects of the two program types. However, as argued
by Valkenburg and van der Voort (1994), the authors could have attempted
to control statistically for the intercorrelations between the program types.
Finally, the stimulation hypothesis has been supported by an experimental
field study conducted by Feshbach and Singer (1971) that showed that
watching a violent television diet for a period of 6 weeks resulted in increased aggressive daydreaming.

The reduction and stimulation hypotheses stem from an effects model of communication, in which the arrow of influence points from television to the viewer. However, there are also hypotheses that stem from a functional communication model, in which the arrow of influence points from the viewer to television. The thematic correspondence hypothesis is the causal counterpart of the stimulation hypothesis. This hypothesis suggests that the themes about which children daydream affect the types of television programs that they prefer to view. The hypothesis argues that children tend to select television content that reflects the themes of their daydreams (McIlwraith & Josephson, 1985). This hypothesis has been investigated only once (Valkenburg et al., 1992). In the latter study, the thematic correspondence hypothesis was not supported because no longitudinal relationships were found between initial measures of daydreaming and subsequent measures of television exposure.

A second functional hypothesis is the escapism hypothesis, which states that television viewing, regardless of content, is stimulated by an overproduction of daydreams to which the child would rather not attend. The hypothesis argues that children suffering from many unpleasant daydreams tend to watch more television to drive away these unpleasant thoughts (McIlwraith & Josephson, 1985). Research conducted with children has lent little support to the escapism hypothesis. In their panel study, Valkenburg et al. (1992) found no longitudinal relationship between dysphoric daydreaming and television exposure. McIlwraith and Schallow (1983) did find a positive cross-sectional relationship between total viewing and the dysphoric-aggressive daydreaming style, but this result does not necessarily support the escapism hypothesis (Valkenburg & van der Voort, 1994). First, the positive relationship that was found also allows for a reverse causal interpretation. Second, the aggressive rather than the dysphoric component of the scale might have been responsible for the positive relationship found because other studies suggest that total viewing is related to aggressive daydreaming (Huesmann & Eron, 1986; Sheehan, 1986; Viemerö & Paajanen, 1992) but is unrelated to dysphoric daydreaming (Valkenburg et al., 1992). The escapism hypothesis has also been disconfirmed by use-and-gratifications studies, which showed that television does not usually fulfill an escapist function for children (e.g., Brown, 1976; Furu, 1971; von Felitzen, 1976).

In conclusion, most of the research into the relationship between television viewing and daydreaming has been cross-sectional and does not permit causal interpretation. The problem of causality was partially solved by the panel study of Valkenburg et al. (1992), but this study suffered from two
methodological weaknesses. First, as already discussed, the authors did not control adequately for the intercorrelations between program types. Second, the authors did not attempt to control for possible third variables. Therefore, although the study of Valkenburg et al. provides more insight into the television-daydreaming relationship than do the cross-sectional correlational studies, there is a need for new panel studies that attempt to overcome the methodological limitations discussed.

In the present study, Valkenburg et al.'s (1992) panel study is replicated. The study differs from the previous study in three respects. First, we take into account the intercorrelations between program types so that the independent contribution of each program type to the prediction of children's daydreaming styles can be established. The same four program types distinguished by Valkenburg et al. are investigated: violent fantasy programs, violent realistic programs, nonviolent children's programs, and nonviolent dramatic programs for adults. Second, unlike Valkenburg et al., we investigate whether television-daydreaming relationships are dependent on sex and age. Sex and age were selected as potential third variables because there is evidence that these background variables are related to both television viewing (Sparafkin, Gadow, & Abelman, 1992) and daydreaming (Heuvelman & Graybill, 1990; Rosenfeld, Huesmann, Eron, & Torney-Purta, 1982). To our knowledge, no other variables have been shown to be correlated with both television viewing and daydreaming, which, of course, does not rule out the possibility that such variables exist. Third, whereas in Valkenburg et al.'s study a shortened version of Rosenfeld et al.'s Imaginal Processes Inventory for Children (IPI-C) was employed, we use the complete IPI-C as modified by Vooijs, Beentjes, and van der Voort (1992). The modified IPI-C identifies three daydreaming styles: (a) a positive-intense daydreaming style, representing a pleasant, childlike, and fanciful style of daydreaming about things that could never happen or exist; (b) an aggressive-heroic daydreaming style, characterized by daydreams about heroes and about the things one would like to do to a disliked person; and (c) a dysphoric daydreaming style, representing unpleasant daydreaming about the things that could happen to oneself or one's family.

Hypotheses

*Positive-Intense Daydreaming Style*

The stimulation hypothesis predicts that both nonviolent children's programs and nonviolent dramatic programs for adults may lead to an increase
in positive-intense daydreaming. However, in earlier research, only nonviolent children's programs were found to be positively related to the positive-intense daydreaming style (Valkenburg et al., 1992). A possible explanation for this finding is that the positive-intense daydreaming style represents childlike, fanciful daydreaming themes that are more consistent with the themes present in nonviolent children's programs than with those present in nonviolent dramatic programs for adults. We therefore expect to find the following:

**Hypothesis 1:** Frequent viewing of nonviolent children's programs leads over time to an increase in children's positive-intense daydreaming.

On the basis of earlier research, we do not expect to find the reverse causal relationship, which is consistent with the thematic correspondence hypothesis. However, because the thematic correspondence hypothesis has been investigated only once, it would be premature to conclude that it has been disconfirmed. Therefore, we again investigate the following hypothesis:

**Hypothesis 2:** A strong positive-intense daydreaming style leads over time to an increase in the frequency with which children watch nonviolent children's programs.

**Aggressive-Heroic Daydreaming Style**

Earlier research suggests that children who frequently watch violent programs more often have aggressive and heroic daydreams (Huesmann & Eron, 1986; Sheehan, 1986; Viemerö & Paajanen, 1992), a relationship that was also found in Valkenburg et al.'s causal-correlational study. We therefore expect to find the following:

**Hypothesis 3:** Frequent viewing of violent programs leads over time to an increase in children's aggressive-heroic daydreaming.

Although there is no evidence for the reverse causal relationship, from aggressive-heroic daydreaming to increased exposure to violent programs, we do check for such a relationship by testing the following hypothesis:

**Hypothesis 4:** A strong aggressive-heroic daydreaming style leads over time to an increase in the frequency with which children watch violent programs.
Dysphoric Daydreaming Style

Although earlier research gives no reason to expect that children with dysphoric daydreams tend to watch more television (Valkenburg et al., 1992), it would be premature to conclude definitively that the escapism hypothesis has been disconfirmed. It is, however, difficult to identify program types that might be watched more frequently as a result of a dysphoric daydreaming style because, to our knowledge, there is no theory proposing that particular types of dramatic programs fulfill an escapist function for children. Although there is no evidence for a longitudinal effect of dysphoric daydreaming on children’s television exposure, we do check for such a relationship by testing the following hypothesis:

_Hypothesis 5:_ A strong dysphoric daydreaming style leads over time to an increase in the frequency with which children watch the four types of programs explored in the present study.

Although earlier research does not support the position that television viewing affects children’s dysphoric daydreaming (Valkenburg et al., 1992), we also check whether such a longitudinal effect occurs. However, because nasty and distressing themes may be depicted in all kinds of program types, it is difficult to specify one program type in particular that might affect children’s dysphoric daydreaming. Therefore, for each of the four program types distinguished in the study, the following hypothesis is investigated:

_Hypothesis 6:_ Frequent exposure to television programs leads over time to an increase in dysphoric daydreaming.

Method

Sample

The study was conducted with a sample of 14 primary schools in an urban district in the Netherlands. These schools were chosen in such a way that children from lower, middle, and higher socioeconomic backgrounds would be equally represented in the sample. In all, 781 children were surveyed on two occasions, with a 1-year interval between the measurements. At the outset of the study, the sample consisted of 369 third graders (8- to 9-year-olds) and 412 fifth graders (10- to 11-year-olds). The questionnaires were administered in the children’s regular classrooms by trained examiners.
During the second data collection wave, 37 children (5%) were lost because they had moved to other schools or stayed back a grade. As a result, the final sample consisted of 744 children (352 third graders and 392 fifth graders).

**Measures**

**DAYDREAMING**

Children's daydreaming styles were measured using the version of the IPI-C developed by Vooijs et al. (1992). This version of the IPI-C consists of 40 questions concerning the content, vividness, and affective tone of daydreaming. Children responded to the questions on a 3-point scale consisting of never (= 0), sometimes (= 1), and often (= 2). The three daydreaming factors found by Vooijs et al. were again found in principal components analyses performed in the present study. However, four items were eliminated because they loaded less than .40 on the factor they helped to define. The three-factor solutions found for the data collected in Year 1 and Year 2 were nearly identical. Table 1 presents the factor solution found for the IPI-C data collected in Year 1. The factor solutions accounted for 37.7% of the variance in Year 1 and for 37.9% of the variance in Year 2.

As was the case in Vooijs et al.'s (1992) study, the first factor represented a positive-intense daydreaming style. Children who scored high on this daydreaming style had vivid, pleasant, and childlike daydreams about things that could never really happen or exist. The second factor represented an aggressive-heroic daydreaming style. Children with an aggressive-heroic daydreaming style frequently daydreamed about the things they would like to do to a person they dislike and about being a winner or hero. The third factor identified a dysphoric daydreaming style. Children with a dysphoric daydreaming style frequently daydreamed about unpleasant things that could happen to them. A subject's score for each of the three daydreaming styles was calculated by totaling the child's unweighted scores on the items that defined the daydreaming scale. We decided not to use weighted factor scores because there is ample evidence that differential weighting of item scores is not worth the trouble (Pedhazur & Pedhazur-Schmelkin, 1991).

The reliabilities of the scales were satisfactory. Cronbach's alpha values were .87 (Year 1) and .87 (Year 2) for the positive-intense scale (15 items), .84 (Year 1) and .83 (Year 2) for the aggressive-heroic scale (10 items), and .79 (Year 1) and .80 (Year 2) for the dysphoric scale (11 items). The intercorrelations between the scales ranged from .45 to .62 in Year 1 and from .34 to .59.
Valkenburg, van der Voort • TV and Daydreaming

Table 1
Varimax-Rotated Factor Solution for the IPI-C Items in Year 1

<table>
<thead>
<tr>
<th>IPI-C Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive-Intense</td>
<td>Aggressive-Heroic</td>
<td>Dysphoric</td>
</tr>
<tr>
<td>1. Do the people and things that you daydream about sometimes seem so real that you think you can almost see or hear them in front of you?</td>
<td>.62</td>
<td>.09</td>
<td>.18</td>
</tr>
<tr>
<td>2. Voices in my daydreams sometimes are so distinct and clear that I am tempted to answer them.</td>
<td>.60</td>
<td>.23</td>
<td>.25</td>
</tr>
<tr>
<td>3. My daydreams cheer me up when I feel blue.</td>
<td>.60</td>
<td>.05</td>
<td>.18</td>
</tr>
<tr>
<td>4. The things I see in my daydreams are as clear as photographs.</td>
<td>.59</td>
<td>.15</td>
<td>.13</td>
</tr>
<tr>
<td>5. I sometimes get so wrapped up in my daydreams that I forget what is happening around me.</td>
<td>.58</td>
<td>.15</td>
<td>.35</td>
</tr>
<tr>
<td>6. When you play pretend games, do you feel like you can really see the pretend places and people in the room with you?</td>
<td>.56</td>
<td>.04</td>
<td>.10</td>
</tr>
<tr>
<td>7. My daydreams leave me with a good feeling.</td>
<td>.55</td>
<td>.18</td>
<td>.15</td>
</tr>
<tr>
<td>8. Did you ever have a whole special pretend world with lots of people or animals that you thought about or played with?</td>
<td>.55</td>
<td>.04</td>
<td>.10</td>
</tr>
<tr>
<td>9. Do you play pretend games about things that do not ever really happen in real life?</td>
<td>.52</td>
<td>.30</td>
<td>.07</td>
</tr>
<tr>
<td>10. Do your daydreams sometimes seem so real that you almost forget it is just pretend and really think that it happened?</td>
<td>.52</td>
<td>.18</td>
<td>.25</td>
</tr>
<tr>
<td>11. Sometimes when you play pretend things, do you feel so happy that you do not even want the game to end?</td>
<td>.51</td>
<td>.26</td>
<td>.05</td>
</tr>
<tr>
<td>12. My thoughts sometimes just wander off.</td>
<td>.51</td>
<td>.17</td>
<td>.25</td>
</tr>
<tr>
<td>13. Some of my daydreams are so powerful that I just cannot take my attention away from them.</td>
<td>.48</td>
<td>.23</td>
<td>.38</td>
</tr>
<tr>
<td>14. Are your daydreams about things that could never really happen such as monsters or fairies or men from outer space?</td>
<td>.45</td>
<td>.19</td>
<td>.11</td>
</tr>
<tr>
<td>15. In a daydream, I can hear a tune almost as clearly as if I were actually listening to it.</td>
<td>.44</td>
<td>.22</td>
<td>.23</td>
</tr>
</tbody>
</table>

Factor 2: Aggressive-heroic daydreaming style

16. In my daydreams, I see myself seeking revenge on those I dislike.  | .05      | .68      | .21      |
17. In my daydreams, I do things that nobody dares to do.            | .32      | .67      | .05      |
18. In my daydreams, I think about being the winner in an important sports event. | .10      | .64      | .07      |
19. Do you play games where you pretend to fight with somebody?     | .18      | .62      | .04      |

(continued)
### Table 1: Continued

<table>
<thead>
<tr>
<th>IPI-C Item</th>
<th>Factor 1 Positive-Intense</th>
<th>Factor 2 Aggressive-Heroic</th>
<th>Factor 3 Dysphoric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 2: Aggressive-heroic daydreaming style</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I sometimes picture myself winning a gold medal in an important championship.</td>
<td>.23</td>
<td>.62</td>
<td>.10</td>
</tr>
<tr>
<td>21. In my daydreams, I sometimes hurt somebody.</td>
<td>.09</td>
<td>.59</td>
<td>.28</td>
</tr>
<tr>
<td>22. I sometimes imagine myself getting even with people who have been mean to me.</td>
<td>.09</td>
<td>.59</td>
<td>.24</td>
</tr>
<tr>
<td>23. Do you sometimes pretend that you are a brave hero who saves somebody or who captures a bad guy?</td>
<td>.37</td>
<td>.53</td>
<td>.06</td>
</tr>
<tr>
<td>24. I sometimes imagine myself being admired by people for doing something exceptional.</td>
<td>.39</td>
<td>.50</td>
<td>.22</td>
</tr>
<tr>
<td>25. When you are daydreaming, do you think about being a great astronaut, scientist, singer, or somebody like that who is very famous?</td>
<td>.32</td>
<td>.40</td>
<td>.14</td>
</tr>
<tr>
<td>Factor 3: Dysphoric daydreaming style</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. In my daydreams, I am sometimes afraid of being caught doing something wrong.</td>
<td>.15</td>
<td>.12</td>
<td>.58</td>
</tr>
<tr>
<td>27. Do you sometimes think about very sad things when you are daydreaming?</td>
<td>.17</td>
<td>.13</td>
<td>.57</td>
</tr>
<tr>
<td>28. Do you get scared because of something you daydream about?</td>
<td>.29</td>
<td>-.11</td>
<td>.56</td>
</tr>
<tr>
<td>29. If someone asks what you are thinking or doing when you are daydreaming, does it make you feel silly?</td>
<td>.12</td>
<td>.08</td>
<td>.56</td>
</tr>
<tr>
<td>30. I sometimes have daydreams that make me feel uncomfortable.</td>
<td>.25</td>
<td>.08</td>
<td>.56</td>
</tr>
<tr>
<td>31. Are your daydreams sometimes so scary that you try real hard not to think about them anymore?</td>
<td>.27</td>
<td>-.03</td>
<td>.53</td>
</tr>
<tr>
<td>32. In my daydreams, I sometimes think that people who I love do not like me.</td>
<td>.16</td>
<td>.18</td>
<td>.52</td>
</tr>
<tr>
<td>33. Do you sometimes daydream about what would happen if you did real bad in school—even when this did not really happen?</td>
<td>.08</td>
<td>.16</td>
<td>.50</td>
</tr>
<tr>
<td>34. Do you sometimes daydream about falling or getting hurt?</td>
<td>.08</td>
<td>.24</td>
<td>.49</td>
</tr>
<tr>
<td>35. Do you sometimes daydream about someone in your family getting hurt?</td>
<td>.10</td>
<td>.14</td>
<td>.47</td>
</tr>
<tr>
<td>36. Do you sometimes think about something bad you did that nobody knows but you?</td>
<td>.06</td>
<td>.32</td>
<td>.41</td>
</tr>
</tbody>
</table>

Eigenvalues: 5.34, 4.25, 3.92

*Note. IPI-C = Imaginal Processes Inventory for Children.*

In Year 2, the 1-year test-retest correlations for the three daydreaming scales varied from .46 to .49. The version of the IPI-C developed by Vooijs et al.
Children were asked to indicate whether they always, often, sometimes, or never watched each of 24 popular violent and nonviolent drama series and children's programs that were broadcast weekly during the two data collection periods. We intended to form separate viewing frequency scales for each of the four program types distinguished in Valkenburg et al.'s (1992) panel study: violent realistic programs, violent fantasy programs, nonviolent dramatic programs, and nonviolent children's programs. However, in principal components analyses, there emerged not four but three factors representing (a) violent dramatic programs, including both violent realistic programs such as *Tour of Duty* and violent fantasy programs such as *Zorro*; (b) nonviolent dramatic programs, including series such as *Love Boat* and *The Bold and the Beautiful*; and (c) nonviolent children's programs, consisting of Dutch children's programs including a few educational programs such as *Sesame Street*. We based our analyses on these three program types. Viewing frequency scale scores for each of the three program types were calculated by summing the child's unweighted scores on each of the items that defined the scale. Each of the three scales consisted of between five and nine programs. Cronbach's alpha values were .79 (Year 1) and .65 (Year 2) for violent dramatic programs, .81 (Year 1) and .70 (Year 2) for nonviolent dramatic programs, and .69 (Year 1) and .73 (Year 2) for nonviolent children's programs. Although most of these reliabilities were sufficient, Cronbach's alpha for violent dramatic programs in Year 2 was rather low, probably because the scale in question consisted of only five items. This small number of items was unavoidable, however, because only five violent drama series were broadcast in the Netherlands during the data collection in Year 2. The correlation between viewing frequencies for violent dramatic programs and nonviolent dramatic programs was .56 in Year 1 and .54 in Year 2. The correlations between viewing frequencies for nonviolent children's programs and the two other program types did not exceed .26 in Year 1 and .15 in Year 2.
Results

Method of Analysis

The causal hypotheses concerning the influence of television on daydreaming and vice versa were investigated with the use of the structural equation modeling program EQS (Bentler, 1989). In structural equations modeling, two types of variables can be distinguished: (a) manifest variables, which are observed or measured directly; and (b) latent variables, which are derived from manifest variables and represent “true” measures free of measurement error.

Latent variables can be estimated from multiple manifest variables or indicators with the use of confirmatory factor analysis. In the construction of latent variables, it is strongly recommended that one use at least three indicators for each latent variable (Bentler & Chou, 1987; Dunn, Everitt, & Pickles, 1993). When a manifest variable has been measured through a multi-item test, it is possible to create multiple indicators of the variable by breaking down the test into a number of subscales, a procedure that is beneficial only if the subscales are sufficiently reliable (Bentler & Chou, 1987). In the present study, it was possible to split up each daydreaming scale into three subscales with acceptable reliabilities because of the sufficiently large number of items (10 to 15) contained in the daydreaming scales. However, in the case of the television exposure measures, splitting up the scales did not yield reliable subscales because of the small number of items (5 to 9) contained in these scales. Therefore, in the case of the television exposure measures, we used measured variables instead of latent variables.

Like Valkenburg et al. (1992), we analyzed the causal relationships between the television viewing and daydreaming measures in two steps. In the first step, a null hypothesis model (Herzog & Nesselroade, 1987) was investigated for each daydreaming style (see Figure 1). The null hypothesis model assumed that there were no time-lagged relations between television exposure and daydreaming. The model assumed that daydreaming in Year 2 was determined only by daydreaming in Year 1. It further assumed that viewing frequencies in Year 2 were influenced only by the viewing frequencies in Year 1. The assumptions of the null hypothesis model are indicated in Figure 1 by solid arrows. The two-way arrows on the left side of the figure indicate that the model permitted correlations between daydreaming in Year 1 and the television viewing measures in Year 1. In addition, the model allowed for correlations across time between error terms (E) for the daydreaming indi-
Figure 1: The null hypothesis model. The variables shown in rectangles are measured variables or indicators, whereas the variables shown in ellipses represent latent variables.

Indicators, as shown in the upper part of the figure. Finally, as shown on the right side of the figure, the model left room for intercorrelations between the disturbance term (D) for daydreaming in Year 2 and the error terms (E) for the television measures in Year 2 because there was no a priori reason to assume that these correlations should be zero.

For each daydreaming style, the EQS analysis established whether or not the null hypothesis model fit with the observed data. If the $\chi^2$ representing the fit of the null hypothesis model was nonsignificant, the null hypothesis model was accepted, meaning that there were no longitudinal relationships between television viewing and daydreaming and vice versa. In this event, no further analyses were conducted. If the $\chi^2$ value was significant, the null hypothesis model was rejected and a second step in the analysis was undertaken to determine which time-lagged paths between daydreaming and television exposure should be added to the model. The six possible time-lagged relations are indicated by dashed arrows in Figure 1. The Lagrange multiplier test (Bentler, 1989) was used to determine which longitudinal
paths, if any, would significantly improve the fit of the model. The new model was accepted if the $\chi^2$ representing its fit was nonsignificant.

**Positive-Intense Daydreaming Style**

With regard to the positive-intense fantasy style, the null hypothesis model was rejected, $\chi^2(36, N = 744) = 52.12, p = .03$. According to the Lagrange multiplier test, two time-lagged paths would significantly improve the model: a negative path ($\beta = -.15, p < .001$) going from violent dramatic programs in Year 1 to positive-intense daydreaming in Year 2, and a positive path ($\beta = .08, p < .05$) going from nonviolent children's programs in Year 1 to positive-intense daydreaming in Year 2 (see Figure 2). The addition of these paths resulted in a satisfactory final model: $\chi^2(34, N = 744) = 33.12, p = .51$. Paths going from positive-intense daydreaming in Year 1 to the television viewing measures in Year 2 did not lead to a significant improvement of the model. Figure 2 presents the parameter estimates for the final model. The estimates of the longitudinal paths going from violent dramatic programs to positive-intense daydreaming and from nonviolent children's programs to positive-intense daydreaming can be interpreted as standardized beta coefficients. These coefficients reflect the independent contribution of each program type to the prediction of positive-intense daydreaming.

**Aggressive-Heroic Daydreaming Style**

For the aggressive-heroic daydreaming style, the null hypothesis model was rejected, $\chi^2(36, N = 744) = 56.92, p = .01$. The Lagrange multiplier test indicated that the model could be improved with a significant positive path ($\beta = .19, p < .001$) from violent dramatic programs in Year 1 to aggressive-heroic daydreaming in Year 2, and a significant negative path ($\beta = -.16, p < .001$) from nonviolent dramatic programs in Year 1 to aggressive-heroic daydreaming in Year 2 (see Figure 3). The resulting modified model fit the data very well, with $\chi^2(34, N = 744) = 34.94, p = .42$, and was therefore accepted as an adequate description of the data.

**Dysphoric Daydreaming Style**

In the case of the dysphoric daydreaming style, the null hypothesis model could not be rejected, $\chi^2(36, N = 744) = 47.82, p = .09$, which means that there were no longitudinal relationships between television viewing and dysphoric daydreaming and vice versa.
Differential Effects for Subgroups in Terms of Age and Sex

As found in earlier research, sex was related to most viewing and daydreaming measures: Boys reportedly watched more violent dramatic programs and nonviolent children’s programs and reported having more aggressive-heroic daydreams and fewer dysphoric daydreams than did girls (see Table 2). Age was related to all program type measures: Older children watched more dramatic programs for adults and fewer nonviolent children’s programs. However, contrary to earlier research findings, age was unrelated to daydreaming style.

Whether the relationships between television viewing and daydreaming found for the total group were dependent on age and sex was established by means of multisample analyses (Bentler, 1989). In these analyses, we investigated whether the three final models found for each of the three daydreaming styles also held for younger and older children and for boys and girls. In the multisample analyses, the time-lagged paths that turned out to be zero for the total group were set to be zero in the subgroups. The nonzero longitudinal paths found between television viewing and daydreaming for
Figure 3: Causal-correlational model of television viewing and aggressive-heroic daydreaming. Note. All paths are significant at $p < .05$.

Table 2
Correlations Between Age and Sex, Viewing Measures, and Daydreaming Style, Averaged Over the Two Data Waves

<table>
<thead>
<tr>
<th></th>
<th>Nonviolent Drama</th>
<th>Violent Drama</th>
<th>Nonviolent Children's Programs</th>
<th>Positive Intense Daydreaming</th>
<th>Aggressive Heroic Daydreaming</th>
<th>Dysphoric Daydreaming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>-.32**</td>
<td>.03</td>
<td>-.08*</td>
<td>.05</td>
<td>-.34**</td>
<td>.14**</td>
</tr>
<tr>
<td>Age</td>
<td>.18**</td>
<td>.18**</td>
<td>-.39**</td>
<td>-.04</td>
<td>-.03</td>
<td>.01</td>
</tr>
</tbody>
</table>

$M = 0$, $F = 1$.

*p < .05; **p < .01.

the total group were constrained to be equal across the subgroups in the multisample analyses. For each nonzero path between television viewing and daydreaming, the Lagrange multiplier test was used to determine whether equalizing the path was empirically appropriate; a significant $\chi^2$ value signaled that, for the path in question, there was a significant difference between subgroups' beta coefficients. The adequacy of the total multisample model was determined via a goodness-of-fit $\chi^2$ test. In this case, a nonsignificant $\chi^2$ indicated that the model provided an adequate fit to the data.
AGE

The causal model of the relationships between television viewing and the positive-intense daydreaming style found for the whole group proved to hold for both the younger age group consisting of 8- to 9-year-olds and the older age group consisting of 10- to 11-year-olds. The two cross-group constraints for the paths going from violent dramatic programs in Year 1 to positive-intense daydreaming in Year 2 and from nonviolent children’s programs in Year 1 to positive-intense daydreaming in Year 2 were both nonsignificant, with \( \chi^2(1, N = 744) = .69, p = .40 \) and \( \chi^2(1, N = 744) = 2.13, p = .15 \), respectively. The multisample model with two equality constraints fit the data very well: \( \chi^2(70, N = 744) = 67.08, p = .58 \).

In the case of the aggressive-heroic daydreaming style, neither the constraint for the positive path going from violent dramatic programs in Year 1 to aggressive-heroic daydreaming in Year 2 nor the constraint for the negative path going from nonviolent dramatic programs in Year 1 to aggressive-heroic daydreaming in Year 2 was significant, \( \chi^2(1, N = 744) = .02, p = .89 \), and \( \chi^2(1, N = 744) = 3.32, p = .07 \), respectively. The causal model found for the whole group also held for the two age groups, \( \chi^2(70, N = 744) = 75.76, p = .30 \).

The multisample null hypothesis model found for the dysphoric daydreaming style also held for the two age groups, \( \chi^2(72, N = 744) = 73.03, p = .44 \). This means that for both younger and older children, there were no causal relationships between television exposure and dysphoric daydreaming.

SEX

With regard to boys (\( n = 381 \)) and girls (\( n = 363 \)), the multisample analyses for the positive-intense daydreaming style revealed no significant constraints for the negative path going from violent dramatic programs in Year 1 to positive-intense daydreaming in Year 2, \( \chi^2(1, N = 744) = 1.48, p = .22 \), and the positive path from nonviolent children’s programs in Year 1 to positive-intense daydreaming in Year 2, \( \chi^2(1, N = 744) = 1.25, p = .26 \). The multisample model for boys and girls provided an acceptable fit to the data: \( \chi^2(70, N = 744) = 87.84, p = .07 \).

For the aggressive-heroic daydreaming style, neither the path going from violent dramatic programs in Year 1 to aggressive-heroic daydreaming in Year 2 nor that going from nonviolent dramatic programs in Year 1 to aggressive-heroic daydreaming in Year 2 was significant, with \( \chi^2(1, N = 744) = \)
.99, \( p = .32 \), and \( \chi^2(1, N = 744) = 1.83, p = .18 \), respectively. The multisample model provided an excellent fit to the data, \( \chi^2(70, N = 744) = 58.80, p = .81 \).

For the dysphoric daydreaming style, the multisample null hypothesis model was adequate for both boys and girls, \( \chi^2(72, N = 744) = 72.68, p = .46 \).

**In Sum**

Although age and sex proved to be related to television viewing and/or daydreaming, the multisample analyses showed that these variables did not act as third variables in the television-daydreaming relationships that were found.

**Discussion**

The two stimulation hypotheses that were adopted from Valkenburg et al.'s (1992) panel study have been confirmed in the present study. In accordance with Hypothesis 1, frequent viewing of nonviolent children's programs appeared to lead over time to an increase in children's positive-intense daydreaming. In agreement with Hypothesis 3, frequent watching of violent dramatic programs was found to stimulate over time an aggressive-heroic daydreaming style. Unlike the Valkenburg et al. study, the present study controlled for both the intercorrelations between program types and the influence of the variables sex and age. Nevertheless, the stimulating effects of television on daydreaming that were found by Valkenburg et al. were reconfirmed in the present study. Hence the findings of this study lead further support for the stimulation hypothesis, which postulates that children who frequently watch certain types of television content tend to daydream more frequently about themes that correspond to that content. To prevent misunderstandings, it should be emphasized that the study showed only that the type of content about which children daydream is affected by television viewing. It would be a mistake to conclude that the study indicated that children daydream more frequently as a result of exposure to television programs because the IPI-C does not measure the overall frequency with which children engage in daydreaming.

A second confirmation of the results of Valkenburg et al. (1992) was the finding that, contrary to Hypothesis 6, television viewing did not affect children's dysphoric daydreaming. Also in agreement with the results of Valkenburg et al. was the finding that children's daydreaming had no longitudinal influence on their viewing behavior. There were no indications that
a strongly positive-intense daydreaming style leads over time to an increase in the viewing of nonviolent children's programs (Hypothesis 2). Nor were there indications that children with a strongly aggressive-heroic daydreaming style tend to develop a preference for watching violent programs (Hypothesis 4). Finally, the study did not support the escapist view, according to which television viewing is stimulated by an overproduction of dysphoric daydreams (Hypothesis 5).

Whereas earlier studies provided only evidence to suggest that certain types of television content stimulate children's daydreaming about corresponding themes, the present study suggests that specific program types may also have reductive effects on daydreaming. Contrary to expectations, it was found that watching violent dramatic programs inhibited positive-intense daydreaming, whereas watching nonviolent dramatic programs appeared to inhibit aggressive-heroic daydreaming. The inhibiting effect of nonviolent dramatic programs on aggressive-heroic daydreaming is diametrically opposed to Valkenburg et al.'s (1992) finding that nonviolent dramatic programs had a stimulating effect on aggressive-heroic daydreaming. The stimulating effect found by Valkenburg et al. was probably a consequence of the fact that the study failed to control for the highly positive correlation between nonviolent and violent programs. As a result, Valkenburg et al.'s study was unable to establish the independent contribution of each of these program types to the prediction of daydreaming. The present study did determine the independent effects of each program type on aggressive-heroic daydreaming, which may explain why we found opposite effects of violent and nonviolent programs on aggressive-heroic daydreaming.

The inhibiting effects of violent programs on positive-intense daydreaming and of nonviolent programs on aggressive-heroic daydreaming cannot be explained by the reduction hypotheses discussed earlier. The explanations for a reductive effect of television forwarded in these hypotheses are not sufficient because they attribute television's reductive effects to structural characteristics of television that inhibit children's daydreaming. Because the reductive effects were limited to specific program types, they must have resulted from watching specific television content rather than from structural characteristics of television. A possible explanation for the reductive effects that were found may lie in differential effects of violent and nonviolent programs on the mood of children. There is evidence that nonviolent programs leave children in a friendly, happy mood (e.g., Biblow, 1970), whereas aggressive programs are likely to lead to an unfriendly, aggressive mood (e.g., Mussen & Rutherford, 1961; Singer, 1975). A friendly mood created by nonviolent programs could give rise to positive daydreams that are incom-
patible with aggressive and heroic daydreams, which may explain why nonviolent programs were found to reduce aggressive-heroic daydreaming. Conversely, it is plausible that an unfriendly mood produced by violent programs would lead to aggressive daydreams that are incompatible with positive daydreaming, which could explain why violent programs were shown to reduce positive-intense daydreaming.

References


Valkenburg, van der Voort • TV and Daydreaming


