DOCUMENT RESUME

ED 136 958 PS 009 211

AUTHOR Anderson, Daniel R.
TITLE Children's Attention to Television.
SPONS AGENCY Grant Foundation, New York, N.Y.; National Science Foundation, Washington, D.C.
PUB DATE Mar 77
NOTE 18p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (New Orleans, Louisiana, March 17-20, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Attention; *Attention Span; *Childrens Television; College Students; Early Childhood Education; *Preschool Children; Research; *Television Viewing; Visual Stimuli
IDENTIFIERS *Attentional Inertia

ABSTRACT

This paper summarizes a series of studies investigating the nature of children's attention to television. In a study of distraction, children's visual attention was found to be affected by distractions in the environment, by the nature of the program and by the viewer's own patterns of attending. A study of the general patterns of attention to television revealed that children have an inertial tendency such that they can become "locked in" to TV viewing. The longer a child had been visually attentive, the greater the probability s/he would continue that attention. This phenomenon was labeled "attentional inertia." Another study investigated the conditional probability of looking back at the television as a function of time since the end of the last look. Again, results indicated the operation of attentional inertia. This phenomenon was also present in a study done with college student subjects. The possibility of generalizing attentional inertia beyond television watching is discussed. (SB)

Children's Attention to Television

Daniel R. Anderson

University of Massachusetts, Amherst

Presented at Society for Research in Child Development meetings, New Orleans, March, 1977. The research reported here was supported by grants from the National Science Foundation and the W. T. Grant Foundation.

Implicit in the title of this symposium is the assumption that television's impact is mediated by the cognitive activities underlying the television viewing experience itself. As Collins and others have shown, children's understanding of television, and so, presumably, its impact, depends on the children's level of cognitive development. But comprehension of a TV program depends as well on attention to the program. If the children do not look at the TV, they cannot understand the visual content, and if they do not listen, then they cannot comprehend the auditory content. Part of the task of understanding the impact of television on children, therefore, is understanding the nature of children's attention to television.

There are, however, other reasons for studying children's TV viewing. Since they spend 20% to 30% of their waking lives in front of TV sets, it is worth studying TV viewing because it is a very large part of what children <u>do</u>. The study of attention to television, we believe, can also lead to general insights which go well beyond television and its effects.

In the several studies I am about to summarize, we observed children or adults watching TV in a pleasantly furnished viewing room equipped with a one-way mirror, as shown in the first slide. As observer, looking through the mirror, recorded visual attention by depressing a switch each time the child looked at the TV screen, and by releasing the switch each time the child looked away, as shown in the second slide. The times of onset and offset of visual attention to the TV were thus automatically stored in a computer for further analysis.

When children watch television, they do not usually stare at the TV screen for hours on end. Rather, they look at the TV, look away, and look back throughout the viewing period. We have found that preschoolers look at and away from the TV about 150 times an hour (Anderson & Levin, 1976; Levin, 1976).

Logically, these fluctuations in visual attention can result from environmental distractions, variations in the content of the TV programs, and factors intrinsic to the children themselves. My associates, Steve Levin, Linda Alwitt, Betty Lorch and I have examined each of these factors. I will briefly discuss the effects of distractions and program content, and then concentrate on some patterns of attention intrinsic to the viewer.

Distractions

It is likely that many children watch TV in a distracting environment. Toys, parents, other children, street noises, may all compete for the child's attention. Sproull (1973) reported, however, that visual attention to Sesame Street was unaffected by the presence of other children. In fact, other viewing behaviors such as laughing and imitation dramatically increased. We found toys, on the other hand, to be effective distractors, as shown in the next slide. We found that attention to Sesame Street dropped from 87% to 44% when the children had toys with which to play.

The TV Program

The content of the TV program also influences attention. We have examined the degree to which preschoolers' visual attention is time-locked to variations in relatively simple and concrete attributes of TV programs. Observers rated videotapes of the TV programs in much the same way as they rated children's visual attention. When an attribute was judged present, the observer depressed a switch and released it when the attribute was judged absent. The attribute occurrences were thus stored in the computer and could be directly related to visual attention. In two studies we found that attention was positively related to women, women's voices, children's voices, puppets, animation, peculiar voices, cuts, auditory changes, sound effects, laughing, and applause. Attention was depressed in the presence of extended zoom and pan shots, still photographs and drawings, filmed real animals such as birds, llamas, monkeys, and bears, and in the presence of adult male voices. Overwhelmingly we found that visual attention was most strongly related to auditory attributes, largely because of their eliciting effects. Some visual attributes such as puppets and animation appeared to be positively related to visual attention only by virtue of their relationship to sound attributes such as peculiar voices. It is, therefore, apparent that in future research, we must carefully examine auditory attention to television.

General Patterns of Visual Attention

Patterns of visual attention to television can be considered without reference to specific variations in program content or to specific environmental distractions. Consider a look at the TV that has been in progress for some period of time. We would like to calculate the conditional probability that as the look has progressed through a given interval of time that it will not end and, therefore, will progress through the next interval of time. A simple hypothesis, illustrated in the next slide (Figure 1), might be that the look continues as long as no external distractions occur and nothing especially "boring" occurs on the TV program. Since the boring or distracting thing cannot "know" how long the look has been in progress, this hypothesis predicts that the conditional probability of continuing to look at the TV as a function of time the look has been in progress, will be a flat function. Alternatively, a fatigue notion suggests that as a look becomes longer, the probability of its continuing should decline. If, however, the children have an inertial tendency such that they can become "locked in" to the TV, the conditional probability of continuing to look should increase. In our first analysis, we calculated these functions, over 3-second intervals, based on the data of sixty 3-, 4-, and 5-year-old children who viewed nearly three hours of heterogeneous children's programs. Before I show you the results, I would like to point out that almost all the psychologists we have asked in informal presentations at the University of Massachusetts, Bell Laboratories, and Educational Testing Service, predicted that the function would be either flat or declining. The actual function is shown in the next slide (Figure 2). It is quite apparent that the probability increases. We have labeled this unsuspected and previously unreported phenomenon "attentional inertia."

In an analogous manner, we calculated the conditional probability of looking back at the TV as a function of time since the end of the last look. Again, the results, shown in the next slide (Figure 3), indicate the operation of attentional inertia. The children were progressively less likely to look back at the TV the longer they looked away. Either the children tended to become "locked in" to a non-TV viewing activity, or the influence of the TV diminishes over time, or both.

In order to demonstrate that these inertia functions are not averaging artifacts, we plotted the functions for each child. We found that the inertia tendency characterized the data of each child. Four representative individual functions are shown in the next slide (Figure 4).

We reanalyzed our data from an earlier study (Anderson & Levin, 1976) in which children aged 12 months to 48 months watched an early Sesame Street program. Again, the inertia functions are present as shown in the next slide (Figure 5). The solid lines indicate the functions for the one- and two-year-olds, and the dotted lines indicate the functions for the three- and four-year-olds. The lower attention of the one- and two-year-olds is indicated by a reduced tendency to "lock in" to the TV screen and a greater tendency to "lock in" to their play. Nevertheless, the form of the function remains in children as young as 12 months.

We were intrigued as to whether the inertia functions may also characterize adult TV viewing. The next slide (Figure 6) shows the individual data for six college students who each watched 4 1/2 hours of self selected prime time television. The students were encouraged to read, knit, do homework, or watch TV, as they saw fit. We had no trouble getting subjects. Again the individual data indicate the operation of attentional inertia in each of the adults. This phenomenon, therefore, appears to hold for individual subjects ranging in age from one to twenty-three years (Anderson, Levin, & Sanders, unpublished).

Although attentional inertia characterizes a wide age range, we do not yet know if it can be generalized beyond the TV viewing situation, or if it characterizes other intrinsically motivated behaviors. Intuitively, however, we find that the necessity of our "getting a good start" in writing a paper, or our tendency to become absorbed in a book only after reading for a while, or even our becoming "lost in thought" while looking at a campfire, may be manifestations of a similar and general phenomenon.

In sum, we find that visual attention to television is indeed influenced by the distracting environment, by the vicissitudes of the TV program, and by the viewer's own patterns of attending. It should be apparent, however, that our findings of attentional inertia and the importance of audition in controlling visual attention would not have been made in the context of current laboratory approaches to the study of attention. Television provides a dynamic, meaningful stimulus quite unlike the static stimuli, presented trial by trial, characteristic of most research on attention and cognition. A similar point of view has recently been stated by Ulric Neisser (1976) in his critique of cognitive research: Neisser deplored the proliferation of laboratory research paradigms "lacking in ecological validity, indifferent to culture, even missing some of the main features of perception and memory as they occur in ordinary life... it will be necessary to pay more attention to the details of the real world in which perceivers and thinkers live.... We may have been lavishing too much effort on hypothetical models of the mind and not enough on analyzing the environment the mind has been shaped to meet" (pp. 7-8). Increasingly, our children's minds meet television: we watch children watch television, therefore, not simply from a desire to understand television's effects, as important as they may be, but also from a conviction that systematic study of this and other real life activities can lead to new and general insights into development.

References

Anderson, D. R., & Levin, S. R. Young children's attention to Sesame Street. Child Development, 1976, 47, 806-811.

Anderson, D. R., Levin, S. R., & Sanders, J. A. Attentional inertia in television viewing. Submitted for publication.

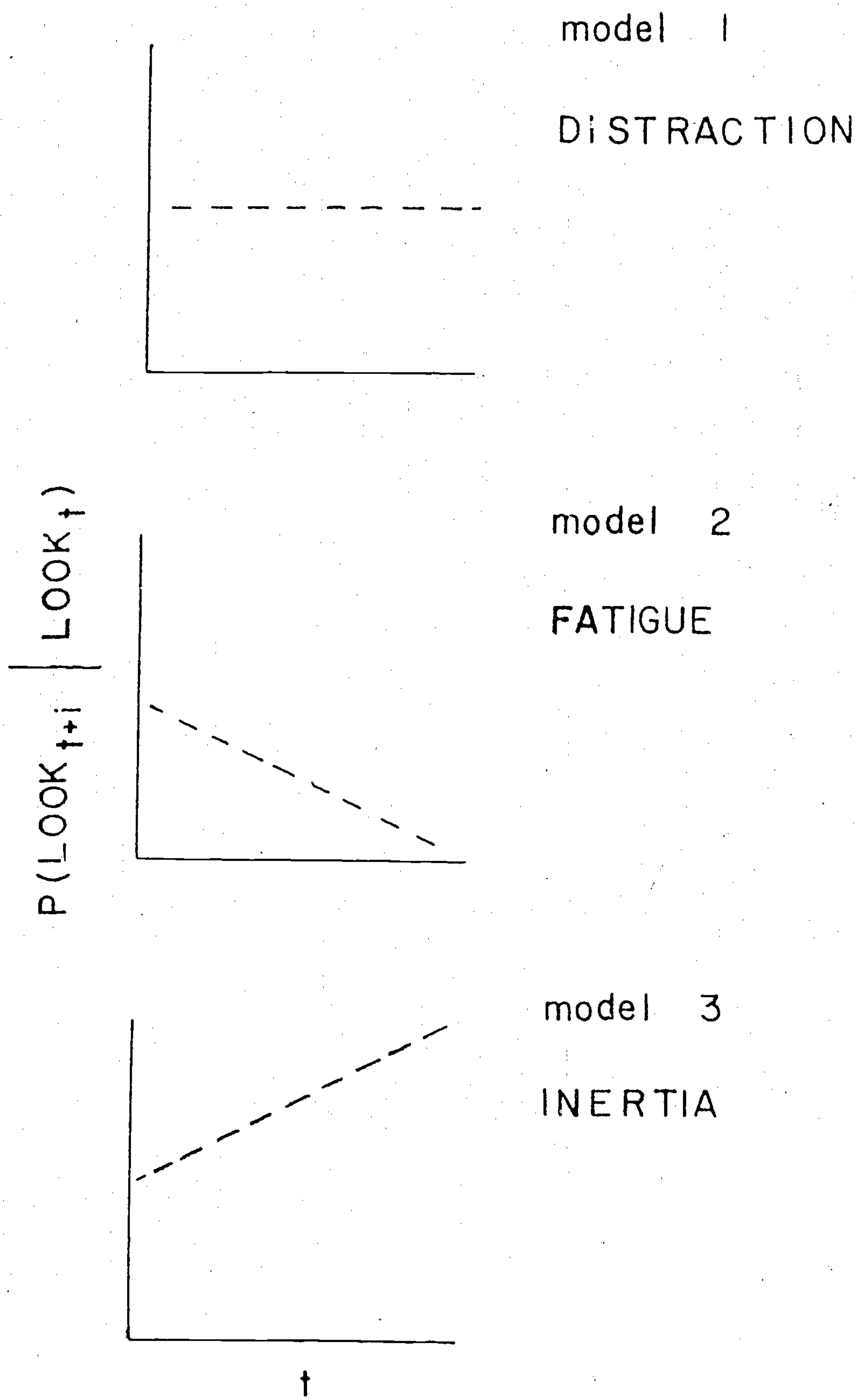
Collins, A. The developing child as viewer. Journal of Communication, 1975, 24, 35-44.

Levin, S. Preschool individual differences and patterns of television viewing. Unpublished doctoral dissertation, University of Massachusetts, 1976.

Neisser, U. Cognition and Reality. San Francisco: Freeman, 1976.

Sproull, N. Visual attention, modeling behaviors, and other verbal and nonverbal meta-communication of pre-kindergarten children viewing Sesame Street. American Educational Research Journal, 1973, 10, 101-114.

Figure 1. Three simple models of looking at television.



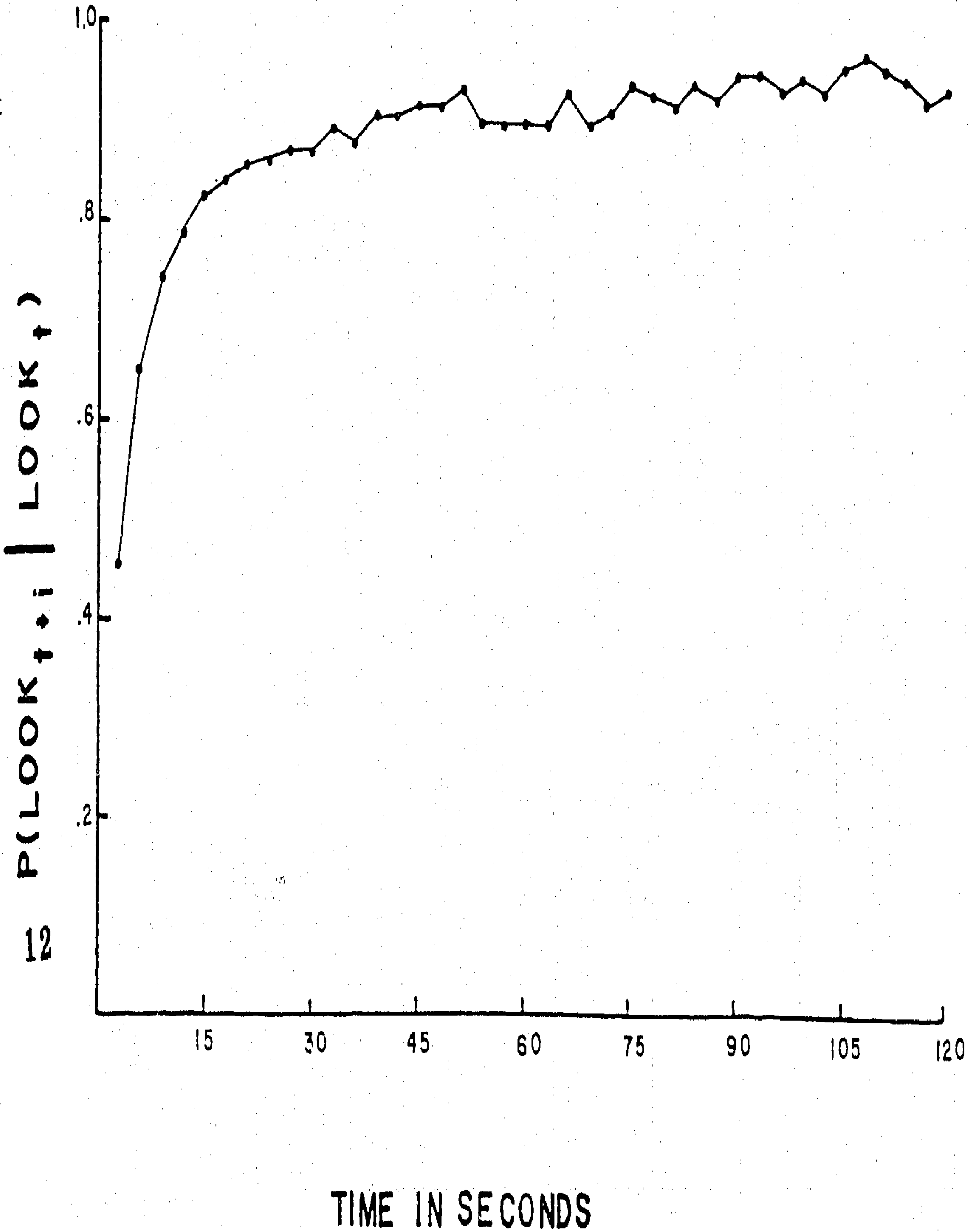
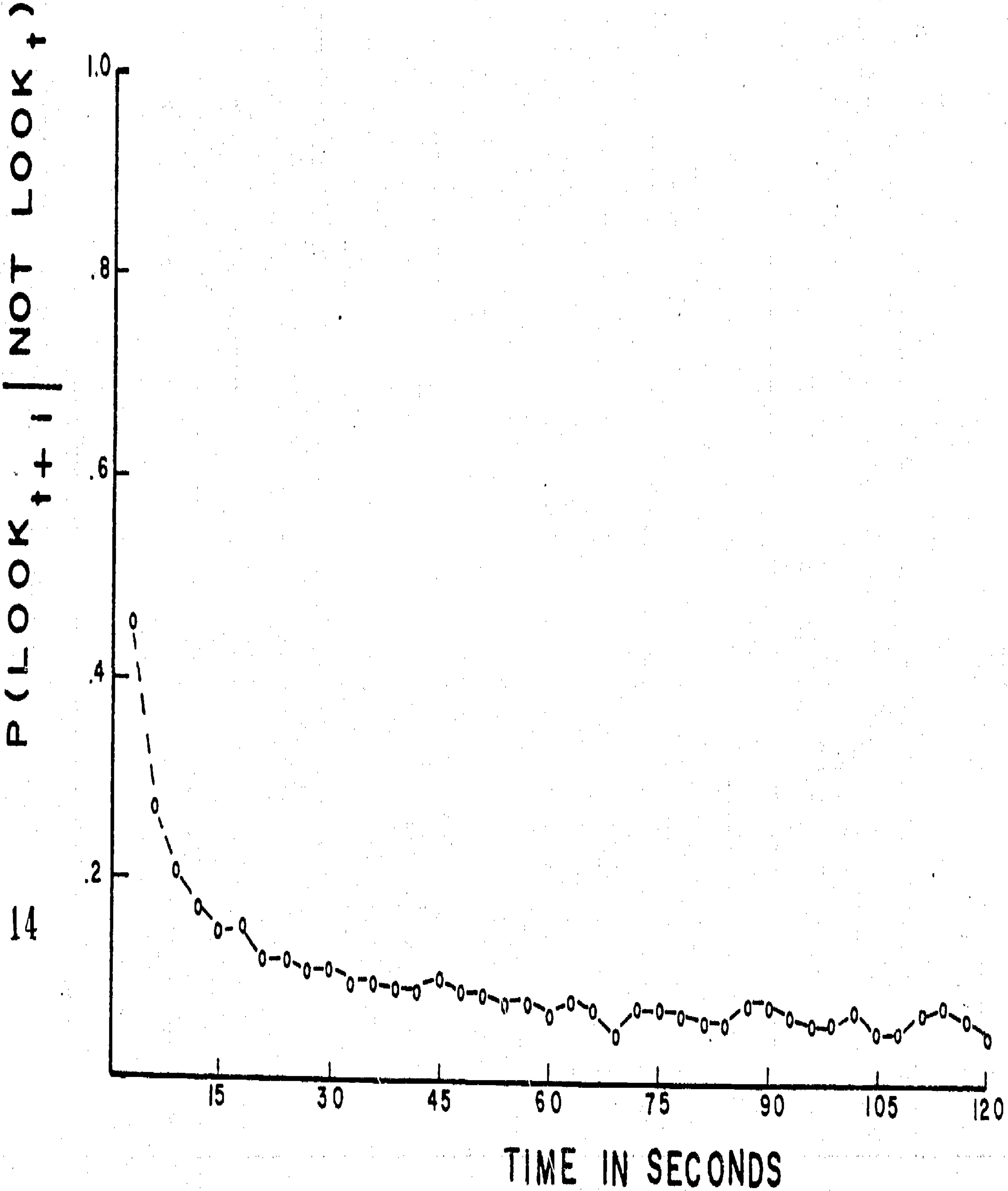


Figure 2. Conditional probability of continuing to look at television as a function of time since the look began.

Figure 3. Conditional probability of looking back at the television as a function of time since the end of the last look.



14

15

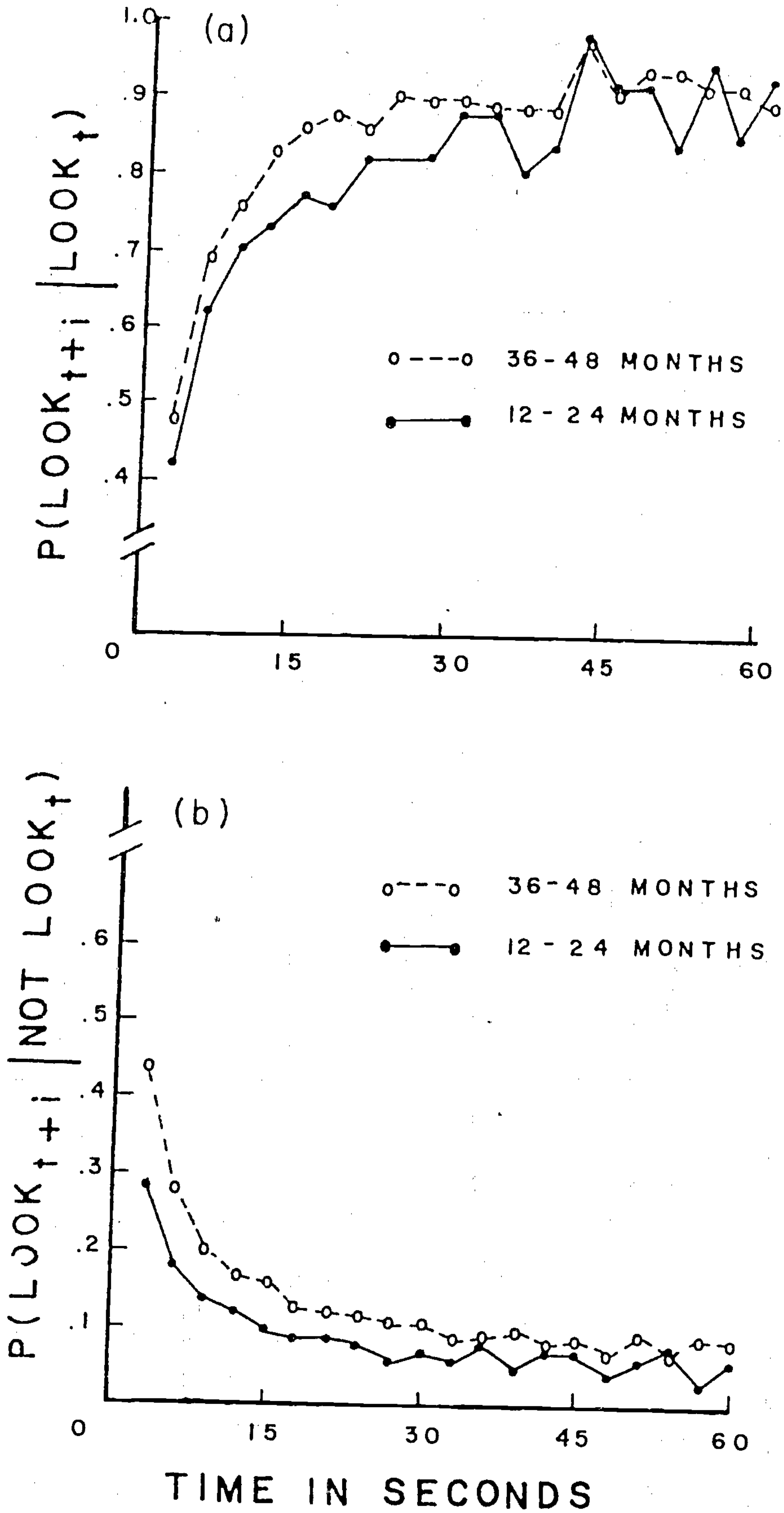


Figure 5. Conditional probability functions obtained in a reanalysis of the data of Anderson & Levin, 1976.

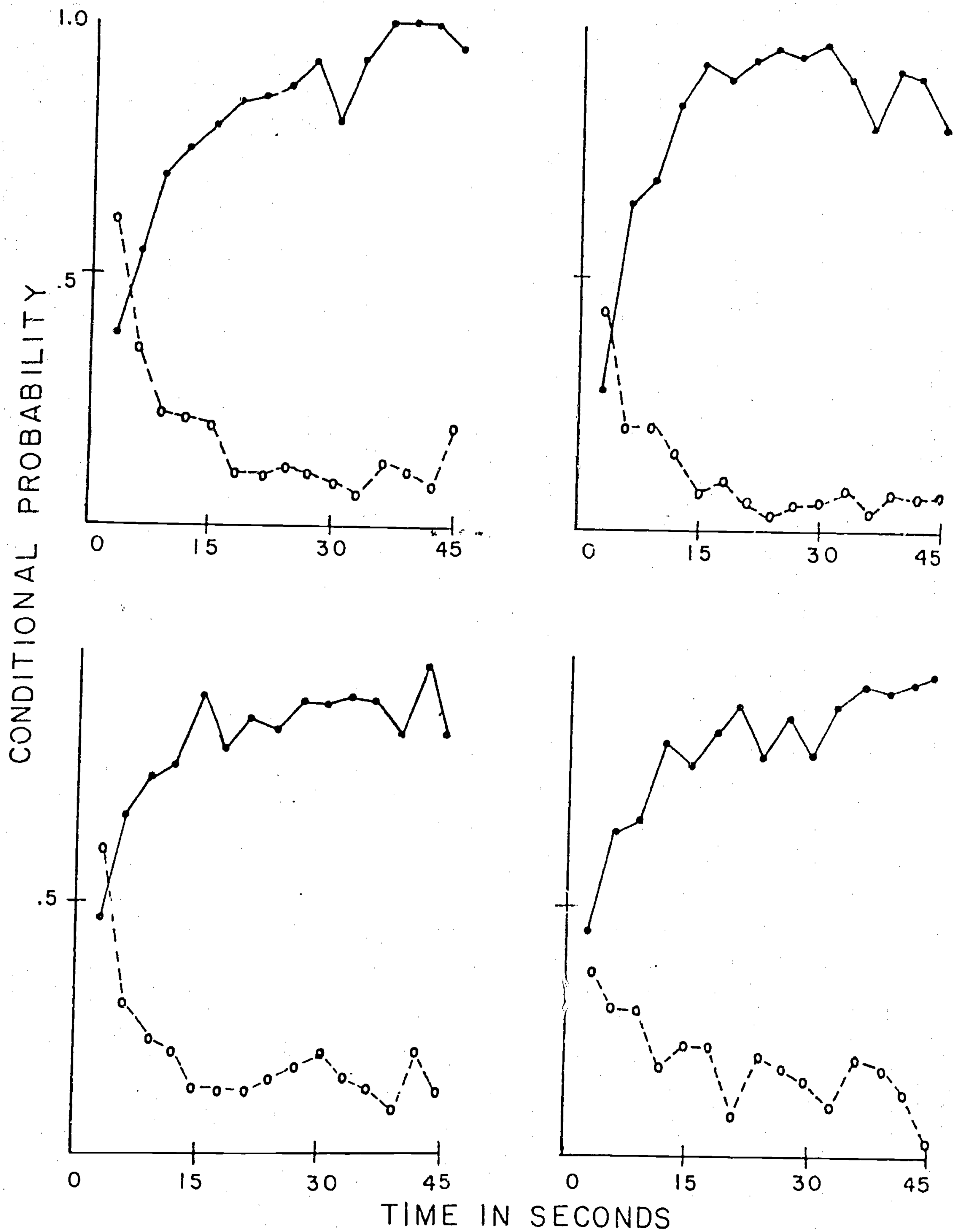


Figure 4. Individual conditional probability functions for four representative children.

Figure 6. Individual conditional probability functions for six college students.