

Video feedback in widescreen: A meta-analysis of family programs

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Abstract

A meta-analysis of 29 studies ($n=1844$ families) shows statistically significant positive effects of video feedback interventions on the parenting behavior and attitude of parents and the development of the child. Parents become more skilled in interacting with their young child and experience fewer problems and gain more pleasure from their role as parent. Shorter programs appeared to be more effective in improving parenting skills. The intervention effects were smaller for the attitude domain at parent level. The experimental outcomes were smaller at child level if the parents belonged to a high-risk group.

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1. Introduction

The use of video in pedagogical programs, whereby parents are filmed taking part in family interactions and then watch the recordings, is popular. The video in these programs makes it possible to hold a mirror up to parents, to focus on specific behavior and to see the effects of this behavior on a child for feedback purposes.

The very first studies into video feedback¹ were still very much focused on the autonomous, isolated effect of watching oneself (see [Berger, 1978](#); [Fuller & Manning, 1973](#); [Hung & Rosenthal, 1981](#)). Later applications of video feedback have been both supplemented and refined in various respects. First of all, video feedback is usually part of a multimodal approach which use is also made of instruction, therapeutic counseling and/or other forms of parental support ([Brisch et al., 1997](#)). Furthermore, family programs use special strategies in the application of video feedback and the therapist works according to a protocol when filming, editing the recordings and in leading the session when watching the video, in keeping with generally formulated principles for this method (see [Dowrick, 1991](#); [Wels, 2004](#) for a review). First, most programs describe the situations to be filmed. The therapist often records the natural interaction between a parent and a child in a regular setting, for example, when a mother plays with the child, or feeds or baths her child in the home environment. Subsequently, the therapist carefully edits the recording to select certain images. In the beginning of the therapy, the selection of fragments may be guided by the purpose to stimulate reflection, gain insight and motivate change and thus elicit a therapeutic effect. Later during the therapy, the clinician may also highlight progress or change that has already been made. The duration of the edited video is usually relatively short, varying from four 30-second excerpts ([Schechter et al., 2006](#)) to 15 min ([Benoit, Madigan, Lecce, Shea & Goldberg, 2001](#)). The last stage of viewing the recordings, the actual video feedback, is especially important. During the replay of the video, a detailed and structured analysis of the video images using behavior coding, i.e. focusing on specific behaviors, is important. The clinician may stop the edited video at certain moments or may repeat certain fragments occasionally to highlight specific behavior of the parent in interaction with the child. The clinician may, for example, focus the parents' attention to highly concrete behavior (for example, sequences of a baby's signal followed by a parents' response to it) to highlight the importance of sensitivity, to provide the client feedback or to elicit a discussion. In the final feedback stage, positive feedback of the therapist is deemed important as it contributes to a cooperative trusting relationship between the therapist and the family, this in keeping with the parents' (in most cases the mother's) need for support and the sometimes problematic past as far as relationships with others was concerned (see [McDonough, 2005](#) for example; see also [Claiborn & Goodyear, 2005](#)).

The video feedback family programs vary in their design and procedures, although two major approaches can be distinguished. Behavior-orientated programs, also referred to as the interactive approach or sensitivity training, are primarily focused on interactive behavior, which forms both the starting point and the end point of the therapy. In these forms of therapy, the behavior of the parent and the child and the interaction between them forms the 'port of entry' (see [Stern, 1985, 2004](#)). Using this approach, video is a logical aid in making interaction the focus of attention (see [McDonough, 2005](#) for an example). Using the psychotherapeutic approach, also referred to as the psychodynamic approach, the mental representations that the mother has of herself, her child and their relationship form the port of entry for therapy, with particular attention often paid to the mother's own past. Video images are shown as part of this approach to help speed up access to early memories of the mother's own childhood ([Lieberman, 2004](#); [Zelenko & Benham, 2000](#)). The video images are also used, however, as with the behavior-orientated programs, to focus attention on the interaction between mother and child, which ties in with consideration of the mother's representations (see [Egeland & Erickson, 2004](#) for an example). Video feedback therefore has a dual purpose here; it is a catalyst in psychotherapy and a visual medium for portraying and discussing interaction. The distinction between the two approaches is not clear cut as some programs combine them both ([Beebe, 2003](#); [Cramer, 1998](#); [Egeland, Weinfeld, Bosquet, & Cheng, 2000](#)).

¹ The video feedback method has been given various names in its history, such as video self-modelling ([Meharg & Woltersdorf, 1990](#)) or, in older publications, video confrontation ([Berger, 1978](#); [Fuller & Manning, 1973](#)), self-confrontation ([Dowrick, 1991](#)) and videotaped recorded playback ([Hung & Rosenthal, 1981](#); [Ray & Saxon, 1992](#)).

1.1. Research into the effectiveness of video feedback

Empirical effect research into video feedback is summarized in a number of qualitative reviews, covering the field of education (Hitchcock, Dowrick, & Prater, 2003; Hung & Rosenthal, 1981), children with a handicap (Dowrick, 1999) and applications in a variety of settings (Meharg & Woltersdorf, 1990). Results of these qualitative review studies are unanimously positive: video feedback leads to an improvement in trained behavior. As yet there is no meta-analytic review of the effects of video feedback on parents. A small number of relevant studies that specifically focus on the parents' sensitivity, are included in the meta-analysis of Bakermans-Kranenburg, van IJzendoorn, and Juffer (2003). In their review study, effects of sensitivity programs that include video feedback compared favorably with other programs, in terms of sensitivity of the parents. However, video feedback was not found to be more effective in influencing attachment of children. Interestingly, Bakermans-Kranenburg et al. also found that programs with fewer sessions were more effective than extensive treatments, supporting their 'Less is more' hypothesis.

In this meta-analysis (Cooper & Hedges, 1994; Wampler, Reifman, & Serovich, 2005), we summarize findings from the studies into the effects of video feedback for the population of parents, focusing on different aspects of the behavior (a) and the attitude domain (b).² We also research effects of video feedback treatments on the children in the families being treated (see Lundahl, Risser, & Lovejoy, 2006 for a comparable approach). This study concentrates on four research questions. Based on previous reviews (Dowrick, 1999; Hitchcock et al., 2003; Hung & Rosenthal, 1981; Meharg & Woltersdorf, 1990), including a review for the population of parents (see Bakermans-Kranenburg et al., 2003), we study the question whether video feedback improves parenting behavior (1). Furthermore, we extend this research question to the domain of parental attitudes (2) and behavior of children (3). The following questions are central to this study:

1. Are video feedback interventions effective in improving parenting behavior?
2. Do video feedback interventions lead to an improvement of parents' attitude towards parenting?
3. Are video feedback interventions effective in improving children's behavior?

In an explorative fashion, we study possible relationships between program characteristics and study outcomes that may shed more light on the question as to whether certain video feedback methods are more effective than others (Cramer, 1998; Wels, 2004). The meta-analysis of Bakermans-Kranenburg et al. (2003) suggests a possible relationship between the duration of programs and study outcomes: shorter programs are more effective in improving parenting behavior. We investigate this relationship, studying not only the number of sessions (a), but also the intervention duration (b) and total program duration (c).

2. Methods

2.1. Literature search

Various methods were used to search for relevant literature. A general search was first carried out using the Social Sciences Citation Index (SSCI) and PsychInfo electronic databases. Terms for the relevant intervention [self-model*, self-confrontation, self-observation, feedback, playback, parental training, intervention, treatment *and* video*] were combined in the search profile with terms for particular family populations [parent*, family*, child*, marital, mother*, and father*]. Various reference books and reviews were also consulted (Bakermans-Kranenburg et al., 2003; Barnard, 1997; Berlin, Ziv, Amaya-Jackson, & Greenberg, 2005; Levy, 2000; Lieberman & Zeanah, 1999; Osofsky & Fitzgerald, 2000; Sameroff, McDonough, & Rosenblum, 2004; Shonkoff & Meisels, 2000; Vangelisti, 2004; Zeanah, 2000). Publications of the Video Interaction Guidance International Research Network were also inventoried. The second phase consisted of searching for references to other studies in the relevant studies found using the 'snowball method'. References to earlier studies were searched for in the written sources. Citation links in the hits found in the electronic SSCI files were also searched with the forward method in order to trace later studies. One unpublished paper (Meharg, 1989; see Meharg & Woltersdorf, 1990) was unfortunately unobtainable.

Studies were chosen if they concerned the experimental study of an intervention which made use of video feedback aimed at parents. Studies which reported on the effects of video instruction on parents (videotape modelling or videotape vignettes) were not selected as they do not concern the filming of parents who then watch themselves (see for example Black & Teti, 1997; Webster-

² Intervention effects of video feedback in the knowledge domain have not been studied to our knowledge.

Stratton, 1994 for such programs). The effect on parents of filming as a measurement method (see Field & Ignatoff, 1981) was also not considered as these methodological orientated studies do not involve intervention programs. A few studies involved video feedback, but it was such a small and/or optional part of a broader intervention with various other parts (see Feinfield & Baker, 2004; Larrieu & Zeanah, 2004), that the experimental results could not be properly correlated with the central focus of this study. Studies also had to report on the effects on parenting behavior, parenting-related attitudes and/or child development. One study was not included for this reason (Brenes & Cooklin, 1983).

For the meta-analysis it was also necessary that the studies give quantitative data necessary for the determination of a statistical effect size. Experimental single subject studies (for example Juffer, van IJzendoorn, & Bakermans-Kranenburg, 1997; Leifer, Wax, Leventhal-Belfer, Fouchia, & Morrison, 1989; Meharg & Lipsker, 1992; Reamer, Brady, & Hawkins, 1998), qualitative case-studies (see Beebe, 2003; Fivaz-Depeursinge, Corboz-Warnery, & Keren, 2004; Marvin, Cooper, Hoffman, & Powell, 2002; Larrieu & Zeanah, 2004; Mayers, 2005; McDonough, 1995; Ray & Saxon, 1992; Thiel-Bonney, 2002; van Doesum, Hosman & Riksen-Walraven, 2005; Zelenko & Benham, 2000), other qualitative studies (Häggman-Laitila, Pietilä, Friis, & Vehviläinen-Julkunen, 2003; Wadsby, Sydsjö, Svedin, 2001) and formative evaluations in intervention development (Jongbloed & Tavecchio, 1995) were not included for this reason. One small-scale study was not included because the statistical information required was not given. Various papers included descriptive data about parental interventions based on video feedback but did not report on the experimental results (for example the studies of Marvin et al. (2002), Cramer, 1998; Hofacker & Papoušek, 1998; Hornstein, Schenk, Wortmann-Fleischer, Schwarz, & Downing, 2006; Vogelvang, 1995. Brisch, Buchheim, Köhntop, Kunzke, Schmücker, Kächele and Pohlandt, 1996; see also Brisch et al., 1997) describe the planning for a study in progress for which no results have yet been published.

In total, 29 different experiments were found, which form the unit of analysis in this meta-analysis. These experiments are described in 26 studies. Studies carried out by Juffer (1997) and Rosenboom (1994) are reviewed in Juffer, Bakermans-Kranenburg, and Van IJzendoorn (2005), which was used as a primary source. The study carried out by Cramer et al. (1990), which reports on the provisional results of a research project, has not been included and the later, definitive report by Robert-Tissot et al. (1996) was used instead. The behavior measures from Sibbing, Kat, Grootenhuis, and Last (2005) were considered to have questionable validity and, hence, they were not included (i.e., parents indicated in a self-report survey how often they showed highly specific behaviors at micro-level before and after the treatment); the attitude items from this survey were included, however. In order to code program-related characteristics the research literature, where possible and where required, was supplemented with background literature about the programs from other sources.

2.2. Coding of studies

Each intervention was coded for three types of characteristics: these of the program, the parent and child population, and the methodology of the studies.

Each intervention was coded according to whether it primarily focused on increasing parent sensitivity or parent representation, as defined by Egeland, Weinfeld, Bosquet, and Cheng (2000). In keeping with this and other publications (see Cramer & Stern, 1988; Bakermans-Kranenburg et al., 2003), these two approaches are not considered mutually exclusive categories, and combinations are therefore possible in practice should different 'points of departure' be chosen in order to reach the ultimate objective. The program duration was also coded (in weeks, subsequently divided into short (≤ 3 months) and long (> 3 months), the average number of sessions (divided into short and long with ≤ 7 or > 8 sessions respectively) and the average length of a session (in minutes). Based on this information, the total program 'dosage' was determined (in hours) where possible. Also indicated was whether the therapist and/or trainer were in any way associated with the research institute carrying out the evaluation (the trainer has an academic affiliation, is member of the research team or is trained by one of the researchers).

The coded study characteristics specific to the video intervention are: a focus on parenting behavior; a focus on parents' mental representations (characteristic of the psychotherapeutic approach); length of recording (in minutes), whether or not the recording was edited before being shown to the parents and whether the recording was watched by a parent, parent or parents and trainer, a group of parents or a group of parents and trainer. The descriptions of the interventions were also used to determine whether or not the recording, editing and/or viewing of the video recording was carried out in a systematic manner. This is the case if the recording situation, the editing method and/or the viewing of the recording was carried out according to a preconceived plan. Klein Velderman (2005), for example, varied the filmed situation according to a fixed protocol. The choice of video fragments (such as selecting a sequence including a child's signal, the corresponding response of an adult and the reaction of the child, which is the central theme for a particular session) and the viewing with the parent also varied in this intervention (for example, use of the 'speaking for the baby' technique in the second session, see Carter, Osofsky, & Hann, 1991). Another specific video category is the use of the video recall. In video recall, the therapist recalls a particular moment using video images and then asks the parent what he or she was thinking at the time, or what he or she is currently thinking. The accent is therefore on perceptions of family interactions (see Welsh & Dickson, 2005). The final video-specific category is the use of feedforward, as defined by Dowrick (1991, 1999). With video feedforward, successful fragments from various recordings are edited into one recording in order to specifically illustrate the desired behavior. In so doing, a person does not look back at his or her 'old' behavior (feedback), but thanks to the editing sees a video of him

or herself showing the desired, future behavior (*feedforward*). This editing technique therefore makes it possible to show exemplary model behavior based on the raw film material from various recordings.

2.2.1. Parent and child population

The following demographic information regarding parents was coded: average age, socio-economic status (low or medium-high) and first-time parents. Presence of certain risk factors at parent level was also coded. This category was broadly defined, following Zeanah (2000), which provides an overview of relevant risk factors (e.g. depression, poverty, single parenthood, and teenage parents). The diagnosis ‘dismissing’ or ‘preoccupied’ in the ‘Adult Attachment Interview’ (see Van IJzendoorn, 1995) was also considered a risk factor at parent level, following the design of the studies in question. Whether or not the parents came from a clinical population was also coded (referral by a doctor or psychologist, possibly a DSM diagnosis). For the child population, age was coded, presence of a clinical syndrome (a developmental or a behavioral disorder, for example, such as excessive crying or hyperactivity, or a clinical score on the Child Behavior Checklist) and whether or not the child was adopted.

2.2.2. Methodological characteristics

The coded methodological characteristics were: presence/absence of control group; the control group received no intervention (possibly a placebo) or an alternative intervention; random assignment; and inclusion of a pretest measurement (also the effect size at the pretest was determined).

Each study was coded by two raters with an inter-rater reliability of .70 or higher (Cohen’s kappa was determined for nominal variables and the intra-class correlation coefficient for interval variables); variables which were coded with inadequate inter-rater reliability were not included in the analyses.

2.3. Analyses

The experimental effect was determined for each study result using the Hedges’ *g* as effect size, which allows a small correction in the calculation for a small sample bias (Hedges & Olkin, 1985). The study unit is the individual experimental comparison, or the effect size per variable (Wampler et al., 2005). The majority of the effect sizes were calculated based on the reported averages and standard deviations; in a few cases the effect size was derived from the statistical test value or taken from the report. The experimental results for ‘negative’ variables (for example, parental stress) were converted so that all positive results had a positive value. The population (parent or child) and the domain (attitude or skills/behavior) were coded for each study result.

Part of the experimental comparisons concerned “within designs”. The standard error for the effect sizes of these designs was determined using the Becker formula (1988; see also Morris, 2000). Correlations between the pretest and the posttest were never reported and a conservative estimation of .5 was used in the calculation. There are 41 study results for the behavior domain, 26 for the attitude domain for the parent population and 28 for the behavior domain for the child, derived from 29 experiments. There were no study results within the knowledge domain among parents, and, as expected, only behavior was examined among children.

The experimental effects were then separately aggregated for the behavioral domain, the attitude domain of the parents and the behavioral domain of the child. A multi-level random effects model (Hedges & Olkin, 1985) was used, which does justice to the hierarchical structure of the data, in which the study results (the lowest level) are nested under interventions (the highest level). A multi-level regression model was then used to analyze whether results in the three domains were moderated by the study characteristics.³ Methodological variables were first checked for significant relationships with study results, before testing the formulated research questions. The models were determined using the restricted maximum likelihood method (Rasbash et al., 2000; Hox, 2002). Finally, the model residual variance was checked using the formula proposed by Bryk and Raudenbush (2002).

3. Results

3.1. Characteristics of the video feedback programs

The majority of the family programs (27 out of 29 experiments) had a behavioral focus; this is not surprising considering the use of video images in family interactions. In five programs the focus was on parent representation. Most programs had one central focus (20), though some had combinations (see Table 1). The interventions were theoretically embedded in attachment theory, psychoanalytic theory or various social learning theories. This last category includes various theories which emphasize the importance of general parent–child interaction for development in the social–emotional and/or cognitive sphere, often tailored to

³ For some analyses the average was used in place of a study characteristic value where the predictor was missing (e.g. number of program sessions).

Table 1
Summary of program characteristics

Study	Program name	Focus	Academic trainer	Duration	Sessions	Session length	Edited video	Video recall
Bakermans et al. (1998): I	Video	B	Yes	14	4	135	Yes	No
Bakermans et al. (1998): II	Video + discussion	B+R	Yes	14	4	135	Yes	No
Benoit et al. (2001)	Interaction Guidance	B	No	5	5	90	No	No
Egeland et al. (2000)	STEEP	B+R	No	65	65	–	–	Yes
Eliëns (2005)	VHT/VIB	B	No	8	–	–	Yes	No
Jansen and Wels (1998a)	VHT	B	No	32	8	–	Yes	No
Janssens and Kemper (1996b)	VHT	B	No	32	–	–	Yes	No
Juffer et al. (2005): with birth children	–	B	Yes	12	3	60	Yes	No
Juffer et al. (2005): without birth children group	–	B	Yes	12	3	60	Yes	No
Kemenoff et al. (1995)	–	R	Yes	5	5	60	No	No
Kemper (2004)	VHT	B	No	40	35	67	Yes	No
Kim and Mahoney (2005)	–	B	–	12	12	105	No	No
Klein Velderman (2005)	VIPP	B	Yes	16	4	90	Yes	No
Klein Velderman (2005)	VIPP-R	B+R	Yes	16	4	180	Yes	No
Landry et al. (2006)	PALS	B	Yes	10	10	90	–	No
Mahoney and Powell (1988)	TRIP	B	No	44	44	–	No	No
Mendelsohn et al. (2005)	–	B	–	154	12	38	No	No
Moran et al. (2005)	–	B	No	5	8	60	No	No
Robert-Tissot et al. (1996)	Interaction Guidance	B	Yes	9	7	60	No	No
Schechter et al. (2006)	CAVES	R	Yes	0	1	–	Yes	Yes
Seifer et al. (1991)	–	B	No	40	40	210	No	No
Sibbing et al. (2005)	VHT	B	No	–	–	–	Yes	No
Stein et al. (2006)	–	B	Yes	28	12	60	Yes	No
Van Zeijl (2006)	VIPP-SD	B	Yes	16	6	90	Yes	No
Vogelvang (1993)	VHT	B	No	60	40	86	Yes	No
Weiner et al. (1994)	VHT/Orion	B	No	14	14	90	Yes	No
Wels et al. (1994)	VHT	B	No	–	–	–	–	No
Wijnroks (1994)	–	B	Yes	26	4	60	–	No
Ziegenhain et al. (2004)	–	B	No	12	7	–	–	No

Note: Focus = behavior-oriented (B), representation-oriented (R), or both (B+R); duration = program duration in weeks; sessions = average number of sessions; session length = in minutes; edited video = the recording is edited; video recall: images used to stimulate recall in parent. Not applicable or information missing reported using ‘–’.

the specific target group (for example, mothers with eating disorders, mothers with a history of violence and neglect, hyperactive children etc.).

The average program duration was 26.2 weeks, or about half a year ($SD=30.4$, min–max: 5–154). An average of 15 sessions was held during this period ($SD=17$; min–max: 3–65) with an average duration of 1.5 h (91 min, $SD=44$, min–max: 38–210). The estimated total time, or program dosage (based on $n=20$), averaged about 20 h. Longer programs (more than 3 months) were more frequent than shorter (59% and 41% respectively). Programs with relatively few sessions (less than 7) and programs with relatively many sessions were more or less equally represented (52% and 48% respectively).

The trainer background varied in the selected studies. The trainer was often a professional connected in some way with the university (in 13 cases). In other cases, the trainer was a professional with no academic affiliation (8 cases) or a student trainee (6 cases), and in 2 experiments it was not possible to determine the trainer’s background. In most cases, the trainer was briefly described; for example, it was often impossible to determine the trainer’s general work experience and specific experience in the program being investigated.

It was not possible to determine the video-specific characteristics for every study due to the concise description of the treatment in a number of reports. Short recordings were usually made in the video feedback interventions (on average 11 min, $SD=6.2$, min–max: 5–30 min; $n=15$).

In most cases, fragments of these recordings were used for later viewing with the parents (16 of the 24 cases, 5 unknown). The length of the edited tape was on average somewhat less, at about 7 min ($SD=4.4$; $n=6$). Attention during feedback discussion of the video images was often focused on general behavioral dimensions (17 times). In a number of programs attention was also paid to more specific micro behaviors, such as ethologically oriented categories (eye contact, confirming reception etc.) or the sensitive

responsivity sequence 'signal from child, response from parent, reaction from child' (as in the Leiden VIPP course). Consultation almost always took place on a one-to-one basis, with parent and trainer. One notable exception was the Kim and Mahoney (2005) study, in which the parents, following instruction in the group and in the home environment, watched the video recordings alone, i.e. without a trainer. Most programs followed a fixed pattern of recording, editing (where relevant) and viewing of the images (16 cases). In the other programs the recorded situation (4 times), editing method (6 times) or manner of viewing the recordings (7 times) changed. Dowrick's (1999) special feed-forward method was not included in any of the programs examined.

3.2. Family characteristics

Parents who took part in the video programs had an average age of 27.9 years (SD=4.7), varying from teenage mothers aged 17 (such as in Egeland et al., 2000; Ziegenhain, Derksen & Dreisörner, 2004) to parents aged 34. The children in the families had an average age of 2.3 years (SD=2.7), varying from 0 to 8 years old. The family socio-economic status, based on 24 experiments, was medium-high (38%) but usually lower (63%). Risk factors at parent level were also often present (16 of the 29 studies). Five studies concerned a clinical parent population. The children came from a clinical child population in about half of the studies (15 out of 29).

3.3. Research design

A quasi-experimental research design with an experimental group and a control group was used in 21 experiments, in 8 of which measurements were taken before and after the experiment. Random assignment of conditions took place in 13 of the 21 studies involving a control group (see Table 2).

Table 2
Summary of research characteristics

Study	Design	Random	Alternative treatment	$N_{con}+N_{exp}$	Age parent	High-risk	Age child	Child clinical
Bakermans et al. (1998): I	B	R	Yes	10+10	26.8	Yes	0.7	No
Bakermans et al. (1998): II	B	R	Yes	10+10	26.8	Yes	0.7	No
Benoit et al. (2001)	B	NR	Yes	14+13	32.3	No	1.5	Yes
Egeland et al. (2000)	B	R	No	80+74	21	Yes	0.0	No
Eliëns (2005)	B	R	Yes	49+33	31.4	No	0.2	Yes
Jansen and Wels (1998a,b)	W	–	–	27	–	No	8.0	Yes
Janssens and Kemper (1996a,b)	W	–	–	10	–	No	6.8	No
Juffer et al. (2005): with children	B	NR	No	30+30	–	No	0.5	No
Juffer et al. (2005): without children	B	NR	No	20+20	–	No	0.5	No
Kemenoff et al. (1995)	B	R	Yes	16+16	–	Yes	–	No
Kemper (2004)	W	–	–	14	–	Yes	7.4	Yes
Kim and Mahoney (2005)	B	N	No	10+8	34.0	No	6.2	Yes
Klein Velderman (2005)	B	R	No	27+28	27.8	Yes	0.6	No
Klein Velderman (2005)	B	R	No	27+26	27.8	Yes	0.6	No
Landry et al. (2006)	B	R	Yes	131+133	27.8	Yes	0.6	Yes
Mahoney and Powell (1988)	W	–	–	41	30.4	No	1.0	Yes
Mendelsohn et al. (2005)	B	R	No	51+42	26.5	Yes	0.04	No
Moran et al. (2005)	B	R	No	50+49	18.4	Yes	0.5	No
Robert-Tissot et al. (1996)	B	R	Yes	42+33	30.6	Yes	1.3	Yes
Schechter et al. (2006)	W	–	–	32	30.0	Yes	2.7	No
Seifer et al. (1991)	B	NR	Yes	17+23	28.0	No	0.7	Yes
Sibbing et al. (2005)	W	–	–	63	–	No	4.5	Yes
Stein et al. (2006)	B	R	Yes	39+38	31.0	Yes	0.4	No
Van Zeijl (2006)	B	R	No	117+120	33.0	Yes	2.3	Yes
Vogelvang (1993)	W	–	–	15	30.4	Yes	6.4	Yes
Weiner et al. (1994)	B	NR	No	52+74	–	Yes	3.2	No
Wels et al. (1994)	W	–	–	5	–	No	7.0	Yes
Wijnroks (1994)	B	NR	No	25+25	–	No	0.5	No
Ziegenhain et al. (2004)	B	NR	Yes	10+5	17.0	Yes	0.00	No

Note: Design: between design with control group (B) or within design without control group (W); random = random assignment of condition (R) or not (NR); alternative treatment = alternative program for control group; $N_{exp}+N_{con}$ = number in experimental group+control group; age parent = in years; high-risk = risk factor present at parent level; age child = age of child (years) at program start; child clinical = child clinically referred. Not applicable or information missing reported using '–'.

Parental behavior was measured using various instruments. In various studies parent sensitivity was measured (for example with the Ainsworth sensitivity scale, Maternal Behavior Q-sort and other sensitivity scales). Other studies also included instruments which measured partly related, yet different aspects of the parent–child interaction. These were positive measures, such as contingent responsiveness, cooperation, emotional-affective support, stimulation, non-intrusiveness, support of the child's focus, suitable verbal or non-verbal response, early communication and looking at the child. 'Negative' variables were also measured, such as low involvement (disengagement), parental force, maternal intrusion, conflict situations during mealtimes and an unclear ('fussy') parental response to a child's signals. One case studied linguistic development stimulation. Another study (van Zeijl, 2006), involving parents of somewhat older children, evaluated sensitive disciplining as well as sensitivity.

The attitude measures mainly concerned experienced parenting problems and stress (for example, the Parenting Stress Index or coping measures). A few studies determined the self-appreciation and self-confidence of parents in the parenting role. A few studies also determined perception of the family climate and one the locus of control. One study measured the attitude of the parents regarding sensitivity, i.e. the importance the parents attached to a sensitive relationship with their child.

Evaluation of the child focused on various aspects of the behavior domain. Attachment of the child is the central variable in the selected attachment paradigm studies. Problem behavior of the child is also measured in a number of studies using the Child Behavior Check List. Other studies also focused on crying, receptive and active language skills, the child's autonomy and well-being, general development and a global measure of the child's behavior (measured using the Child Behavior Rating Scale).

3.4. Intervention effects

Results were analyzed according to parental behavior, parental attitude and the effects on the children (research questions 1, 2 and 3, respectively).

3.5. Effects on parenting behavior of parents

The meta-analysis showed a positive, statistically significant effect for video feedback intervention on the parenting behavior of parents. The aggregate effect was 0.47 (SE=0.08; see Table 3), which is equal to an average effect, according to Cohen's (1988) statistical rules of thumb. Results are not homogenous and a moderator analysis was performed to determine with which study characteristics the effect sizes show a systematic relationship. There is little systematic variance.

The effect on parenting behavior is moderated by the program duration: programs of a shorter duration are more effective (see Table 4). This intervention duration effect remained statistically significant when this moderator was analyzed together with the 'parents in a high-risk group' variable in a single model. No relationship was found between the effects on parent behavior and the number of sessions and the 'dosage' of the program; an additional model with these moderators after the inclusion of the 'parents in a high-risk group' variable showed the same non-significant results. Finally, other relationships with program effects were not found.

3.6. Effects on parental attitude

The video interventions also showed a statistically significant effect on parental attitude. The aggregate effect of 0.37 (SE=0.10) is between 'small' and 'average' and is therefore somewhat smaller than for the behavior domain. The attitude domain also shows heterogeneous results, which were further investigated.

Effects on parenting perception are considerably less under parents from high-risk groups. A model with this single predictor explains variation in results well and shows acceptable fit ($p=0.12$; see Table 4).

Table 3
Results for parents: behavior ($k=41$) and attitude domain ($k=26$)

Parameters	Behavior		Attitude	
	ES	SE	ES	SE
'Fixed' effect				
Integrated effect	0.47*	0.08	0.37*	0.10
Random effects				
Variance between experiments	0.06*	0.03	0.08	0.05
Homogeneity test	$\chi^2=106^*$		$\chi^2=51^*$	

Note: Statistically significant results ($p<0.05$) are shown with an asterisk.

Table 4
Relationships between effect size and study characteristics (effect size, ES, and model fit, p)

	Parental behavior		Parental attitude		Child's behavior	
	ES	p	ES	p	ES	p
Program duration		.005				–
Short	0.68		–		–	
Long	0.27		–		–	
Parents from high-risk group				.12		.000
Yes	–	–	0.20	–	0.13	–
No	–	–	0.68	–	0.64	–
Evaluated by involved person						.000
Yes	–	–	–	–	0.69	
No	–	–	–	–	0.29	

3.7. Effects on children

The effects of video feedback interventions were also statistically significant for behavior measures among the child population. The aggregate effect is between ‘small’ and ‘average’, with an effect size of 0.33 (SE=0.10; see Table 5). The effect sizes from the child domain were not homogeneous and a moderator analysis was conducted to find statistically significant associations between study characteristics and experimental outcomes.

The positive effects were, as in the parental attitude domain, smaller when parents were from a high-risk group. This was the case with or without respondent bias correction. The effects under clinically-referred children were however not less and comparable with the results from the non-clinical groups.

4. Conclusion and discussion

Interventions with video feedback are effective in families with young children. On completion of the program, parents are more skilled in interacting with their child and have a more positive perception of parenting. The programs were also found to have a positive effect on the development of the children in the families being treated. The positive result is encouraging because it shows that family programs that include video feedback achieve the intended dual level effect: parents improve their interaction skills which in turn help in the development of their children. It should be noted that this meta-analysis does not allow specific conclusions pertaining to the unique contribution of the video feedback as a separate, distinct intervention component. The included video feedback studies involved multimodal and multifaceted therapeutic interventions which combined video feedback with various other components (for example, social support of parents). It is therefore not demonstrated that video feedback is the crucial component of the treatments.

The behavior-orientated and psychotherapeutic programs included in this meta-analysis were equally effective in improving parents’ attitude and parenting behavior. The fact that behavior-orientated and psychotherapeutic approaches often share a focus on parenting behavior (see also Egeland et al., 2000) does not allow a strong test of their differential effectiveness. However, it seems safe to conclude that programs with a dual focus on parental behavior and representations are not superior to programs with a single focus on parenting behavior (see also Klein Velderman, 2005).

Results of this meta-analysis are, to some extent, in keeping with earlier studies, which research video feedback from different but related perspectives. First of all, the positive result of this meta-analysis for the behavior domain fits

Table 5
Results for children’s behavior ($k=28$)

Parameters	ES	SE
‘Fixed’ effect		
Integrated effect	0.33*	0.10
Random effect		
Variance between experiments	0.13*	0.06
Homogeneity test	$\chi^2=79^*$	

Note: Statistically significant results ($p<0.05$) are shown with an asterisk.

in with the positive conclusions from earlier qualitative reviews of the effects of video feedback, all of which focused on behavior change (Dowrick, 1999; Hitchcock et al., 2003; Hung & Rosenthal, 1981; Meharg & Woltersdorf, 1990). Further comparison is difficult, though, due to the qualitative nature of these studies and the fact that different populations were investigated in these reviews. The result of this meta-analysis also fits in with the findings of Bakermans-Kranenburg et al. (2003). In their study, programs including video feedback showed a positive effect for 8 included randomized experiments in their study ($d=0.44$, compared with 0.31 for the other programs, 8 studies) and 16 other, non-randomized studies ($d=0.74$, compared with 0.36 for other programs). This meta-analysis extends this finding and shows that video feedback is not only effective in increasing parents' sensitivity, as measured with standardized measures, but can also affect different parental skills, like stimulation and intrusiveness. Furthermore, this meta-analysis shows that video feedback is also effective in the attitude domain, or, more specifically, in reducing parental stress and increasing parents' self-confidence.

This meta-analysis shows that the effects of video feedback depend on the program duration (in the behavioral domain). The meta-analysis result that shorter programs are more effective in the behavior domain is related in part to the 'less is more' hypothesis of Bakermans-Kranenburg et al. (2003). The current meta-analysis did not find a direct effect of the number of sessions, but the relationship with program duration is in the same direction. This study points, slightly different from the 'less is more' hypothesis of Bakermans et al., to a 'short but powerful' hypothesis: interventions of a short duration are, on average, more effective (see also Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2005).

Another critical factor is the presence of risk factors among parents, which moderates the effects in the attitude domain for parents and the child domain. A possible explanation for this finding is that video feedback with its specific focus on behavior of the child and the parent may not be tailored to meeting all the needs of families which face serious difficulties, due to complicating factors at family level, at child level, or perhaps a combination thereof. Perhaps video feedback with its focus on the parent–child interaction is more successful in alleviating parental stress that is specifically related to raising issues (i.e., at parent–child level), but is not tailored to relieve the burden of other significant problems at parent level (e.g., maternal depression) or family level (e.g., poverty, isolation). This hypothesis deserves further investigation, however. Future intervention studies with multi-problem families could include attitude measures at parent–child level, parent level and family level to find out in which domains a relieve of the burden is experienced by the parents. This line of study should make clear whether video feedback interventions should be complemented with other types of support to make a significant change for multi-problem families.

A clinician may use the visual medium of video feedback in regular clinical practice as a tool to complement the mainly verbal nature of the therapy. The method is useful if a clinician wants to focus the attention of clients on their concrete behavior (as in the behavior-orientated approach) or if video feedback accelerates clients' access to their memories or thoughts (as in the psychotherapeutic approach). In both applications, the use of video feedback should always be structured by a protocol that guides the recording, editing and presentation of video images. In a psychotherapeutic approach, the selection of images should be guided by their assumed value in eliciting thoughts and feelings of the client. According to the principles of positive self review (see Dowrick, 1991), selection of images in the behavior-orientated approach should highlight instances of positive behavior that the client should show more often. Delayed video feedback is presumably the preferable method in most clinical settings because it allows a careful selection of images and a preparation of the presentation and subsequent discussion with the client. Application of video as a medium in family intervention programs is interesting because parents are watching themselves and therefore pay more attention and are often more emotionally involved than usual when watching themselves and their child in the video images (Dowrick, 1999; Fuller & Manning, 1973; Papoušek, 2000). Video recordings make it possible to watch oneself, but at a distance and with time for reflection. For example, parents may discover discrepancies between the image they had of themselves or their child and the images they now see of themselves and their child (Fivaz-Depeursinge et al., 2004; Papoušek, 2000). By rewinding, using slow motion and freezing the image, it is possible to intensely analyze each 'split second' of the parent–child interactions. Using video recordings in this way sometimes clearly shows parents just how many signals a child is giving which they had not previously seen.

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⁴ Studies marked with an asterisk are included in the meta-analysis.

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