

NETHERLANDS
JOURNAL OF
PSYCHOLOGY

VOLUME 66, NUMBER 1, JANUARY 2011

What does death have to do with drinking?

Enhancing implicit self-esteem in children

How do children experience their parents' feeding practices?

Letter to the editor

The loss of happy life years associated with mental disorders

Volume 66/number 1/January 2011 Netherlands Journal of Psychology

Editorial Policy

The *Netherlands Journal of Psychology* publishes original articles of high quality, including empirical articles, review essays on selected books, theoretical and methodological papers in any area of psychology, as well as ongoing commentaries and discussion, and short reports on the validation of psychodiagnostic instruments and related methodological tools.

The Journal's focus is on empirical and conceptual studies that contribute to the theoretical explanation of human behaviour and experience. Manuscripts can deal with human development, social processes and the social perspective of human behaviour, psychopathology, forensic psychology and psychiatry neuroscience, psychophysiology, philosophy of mind, the computational approach, emotion, cognition (including attention, perception, and memory), decision-making, human performance, educational psychology, health, selection and assessment and human behaviour in organisations, selection and assessment. Any other manuscripts that may be of importance to those involved with psychological research are welcomed. Manuscripts should be written to the professional and academic readership.

It is the *Netherlands Journal of Psychology's* policy to publish about recent developments in psychology and related fields. It is also the editors' policy to regularly focus on recent developments in psychology in the Netherlands. In particular, authors may be invited to contribute to special issues.

The *Netherlands Journal of Psychology* will help to focus the interest of psychologists, and others professionally interested in the field, on information about developments in a wide area of specialists research activities and results of empirical and theoretical work in the field of psychology.

The *Netherlands Journal of Psychology* offers specialists the opportunity to publish their findings to a broad audience that is scientifically interested in psychology.

The *Netherlands Journal of Psychology* aims at offering a continuous forum for intellectual discussion and transfer of knowledge and information about developments in psychology.

Categories of articles to be published and manuscripts to be welcomed are:

Review articles

Manuscripts should be limited to a maximum of 8000 words. Authors planning contributions that exceed this maximum must contact the editor prior to submitting their manuscript

Original reports of empirical research

Manuscripts should be limited to a maximum of 5000 words. Authors planning contributions that exceed this maximum must contact the editor prior to submitting their manuscript.

Thematic issues

Authors with plans for planning a thematic issue are encouraged to contact the editor in an early stage. Consultation will be necessary about number of manuscripts, number of words per manuscript, review procedure, covering of the field, etc.

Developments in the field (short)

Manuscripts should be limited to a maximum of 1000 words. Authors planning contributions that exceed this maximum must contact the editor prior to submitting their manuscript

Book review essays (short)

Manuscripts with a maximum of 1000 words need no preliminary contact with the editor. Authors planning larger contributions must contact the editor.

Letters to the editor

Manuscripts should be limited to a maximum of 500 words. Authors planning contributions that exceed this maximum must contact the editor prior to submitting their manuscript

Technical notes

Manuscripts should be limited to a maximum of 2000 words. Authors planning contributions that exceed this maximum must contact the editor prior to submitting their manuscript. Authors reporting (in English) on, e.g. validation, of tests and other instruments in the Dutch language or in the Netherlands are encouraged to report in *The Netherlands Journal of Psychology*. The editors want to inform non-Dutch researchers of developments and of the use of instruments in the Dutch language.

Editor

René van Hezewijk
Open University of the Netherlands

Associate editors

Frederik Anseel *Ghent University*
Denny Borsboom *University of Amsterdam*
Arjan Bos *Maastricht University*
Maaïke Cima *Tilburg University*
Paul van Geert *University of Groningen*
Dennis Schutter *Utrecht University*

Editorial board

O. van den Berg *University of Leuven*
N. Ellemeers *Leiden University*
E. de Haan *University of Amsterdam*
J. van Heerden *Maastricht University*
J. Hoogstraten *University of Amsterdam*
M. van den Hout *Utrecht University*
J. Jolles *Maastricht University*
W. Koops *Utrecht University*
W. Schaufeli *Utrecht University*
R. Schreuder *Radboud University Nijmegen*
H.J. Stam *University of Calgary*

Editor's address

Professor René van Hezewijk
Faculty of Psychology, Open University of the Netherlands, PO Box 2960,
6401 DL Heerlen, the Netherlands
tel + 31 45 576 23 99, fax + 31 45 576 29 39
All correspondence by e-mail: rene.vanhezewijk@ou.nl

Publisher: Wil Zeegers, Nederlands Instituut van Psychologen,
PO Box 9921, 1006 AP Amsterdam, the Netherlands,
E-mail: wil.zeegers@psynip.nl

Subscription rates

Personal rate: € 125.-
Institutional rate: € 226.-
Student rate: € 62.50
All prices are per calendar year and include value added tax (VAT)
Price per issue: € 31.95 (incl. VAT)

Subscription administration

Performis Media, PO Box 2396, 5202 CJ 's Hertogenbosch, the Netherlands, tel:
+ 31 73 689 58 89. For information and orders, please consult www.performis.nl

Change of address

Please notify any changes in addressee and/or address via
www.performis.nl.

Payment

Please use the payment/accept giro form if possible as this simplifies the administrative process.

Advertisements

Performis Media, PO Box 2396, 5202 CJ 's Hertogenbosch,
the Netherlands, tel: + 31 73 689 58 89.
The Netherlands Journal of Psychology is published four times a year.

© Nederlands Instituut van Psychologen 2011
ISSN 1872-552X

Contents

VOLUME 66, NUMBER 1, JANUARY 2011

- What does death have to do with drinking? A test of the terror management account of alcohol misuse using subliminal priming 2
Francine J. Aarts and Reinout W. Wiers
-
- Enhancing implicit self-esteem in children: Can a smile make you feel worthwhile? 11
Jorg Huijding, Arjan E. R. Bos, and Peter Muris
-
- How do children experience their parents' feeding practices? A study using the Dutch Child Feeding Questionnaire- child version 26
Esther Jansen, Sandra Mulkens, Ellen Sanders, and Anita Jansen
-
- Letter to the editor*
- The loss of happy life years associated with mental disorders in the Netherlands 33
Ad Bergsma, Ruut Veenhoven, Margreet ten Have, and Ron de Graaf

What does death have to do with drinking?

A test of the terror management account of alcohol misuse using subliminal priming

This study examined whether drinking alcohol serves as a distal defence mechanism against death terror by providing a worldview and self-esteem. A convenience sample of students who drank at least 12 alcoholic drinks per week ($N = 57$) were subliminally primed with neutral, painful or dead faces, after which they tasted and rated an alcoholic drink, a placebo, a soft drink and an anti-placebo. Our hypothesis was that participants with low self-esteem would drink more and give higher ratings to the alcoholic drinks in the death condition. Regression analyses partially supported the hypotheses. Limitations and implications of the study are discussed.

Where: Netherlands Journal of Psychology, Volume 66, 2-10

Received 4 April 2009; accepted 11 November 2009

Keywords: Alcohol use; Addictive behaviour; Terror management theory; Self-esteem; Emotional priming; Subliminal priming

Authors: Francine J. Aarts* and Reinout W. Wiers**

The central paradox of addictive behaviour is that so many people continue this behaviour, even when they realise that it harms them (cf. Wiers & Stacy, 2006a,b). Given that many people understand that addictive behaviours often violate self-preservation and reproduction goals, there must be other reasons why people continue harmful use of alcohol and drugs despite all related problems. A possible reason, central in this paper, is that drinking might serve as a coping mechanism against fear of death. At first sight, this may seem far-fetched; what does death have to do with drinking? The hypothesis is based on the Terror Management Theory (TMT; for a review, see Greenberg, Solomon & Pyszczynski, 1997), which states that people have an existential death terror, which is countered with several defence mechanisms. In this study we test whether alcohol use could be conceived as such a defence mechanism, hence we test the TMTA (Terror Management Theory for Alcohol).

Terror Management Theory

Humans resemble animals in their instinct for self-preservation. However, humans are also aware that their life is finite, and according to TMT, this results in death terror. When people are made

aware of their own mortality, proximal defences such as active suppression and denial counter the accessibility of death thoughts. But when proximal defences slacken over time (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000), or under high cognitive load (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997b) death thoughts regain accessibility and distal defences may come into play.

Distal defences are thought to operate as a dual-component anxiety buffer, consisting of a cultural worldview and self-esteem. A cultural worldview consists of concepts and standards for understanding the world. It can provide a sense of symbolic immortality, such as the idea of contributing to something that goes beyond one's own life or a sense of literal immortality, such as belief in the existence of after-life or reincarnation (Dechesne et al., 2003). Believing in a cultural worldview is not enough to escape death terror: one must also believe that one is a valuable part of that world. In other words, one must have a sense of personal value and self-esteem (Greenberg et al., 1997). A number of studies have provided evidence for the dual-component anxiety buffer. When mortality is salient, people have more accessible worldviews (Arndt, Greenberg, &

* Maastricht University

** ADAPT-lab, Department of Psychology, University of Amsterdam

Correspondence to:
Reinout Wiers, Faculty of Social and Behavioural Sciences,
University of Amsterdam,
Roetersstraat 15,
1018 WB Amsterdam,
the Netherlands,
e-mail: R.Wiers@uva.nl

Cook, 2002), form more positive impressions of people who adhere to their religion (Greenberg et al., 1990), and allocate higher penalties and are more aggressive to those who threaten their worldview (McGregor et al., 1998; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). When self-esteem is high (either as a trait or after manipulation), effects of mortality salience disappear (Harmon-Jones, Simon, Greenberg, Pyszczynski, Solomon, & McGregor, 1997). Conversely, when self-esteem is low, mortality salience leads people to enhance their self-esteem, for example, by attributing successes to oneself and failures to external factors (Mikulincer & Florian, 2002).

Drinking alcohol as a distal defence mechanism

There are several indications that drinking alcohol can serve as both a direct and an indirect defence against death terror. Alcohol provides direct psychoactive effects, and may therefore provide a way of dealing with conscious death concerns (Arndt, Goldenberg, Greenberg, Pyszczynski, & Solomon, 2000). Alcohol might also provide the two components of a distal defence suggested by TMT: a worldview and sufficient self-esteem. Especially for heavy drinkers, drinking alcohol and the rituals this involves might constitute a worldview, in the sense that people feel they belong to a group of drinkers (e.g. the usual crowd in a bar). Further, in both cross-sectional and longitudinal research, a robust inverse relationship between religiosity and alcohol use and abuse has been found (see for reviews, Booth & Martin, 1998; Gorsuch, 1995). This can be partly explained by the coherence hypothesis (George, Larson, Koenig, & McCullough, 2000), stating that religion reduces substance use by giving meaning and coherence to life, or in terms of TMT, providing a worldview.

The second criteria for alcohol to be a distal defence is that it should enhance people's self-esteem. People often drink to feel confident (an enhancement motive; Cooper, 1994). An inverse relation between self-esteem and drinking alcohol has been found in cross-sectional research (Luhtanen & Crocker, 2005; Pullen, 1994; Wills, 1994), but results of longitudinal research are mixed (Crocker, 2002; Wills, 1994; Zimmerman, Copeland, Shope, & Dielman, 1997).

The inverse relationship between alcohol use and both religion and self-esteem supports the view that drinking alcohol can provide the two ingredients of a distal defence against death terror. However, drinking constitutes a risk behaviour and thus in fact goes against the self-preservation

instinct. TMT explains paradoxical defence mechanisms by indicating that the main function of distal defences is to take away death terror, not to enhance survival (Taubman Ben-Ari, Florian, & Mikulincer, 1999). Therefore, distal defences sometimes conflict both with proximal defences and with the instinct for self-preservation. When a risk behaviour is relevant to one's self-esteem, it becomes more attractive under mortality salience conditions (e.g. sun tanning, Routledge, Arndt, & Goldenberg, 2004; reckless driving, Taubman Ben-Ari, Florian, & Mikulincer, 2000). In a review on Terror Management and Health Models, factors influencing whether mortality salience leads to health-defeating outcomes or health-facilitating outcomes are discussed (Goldenberg & Arndt, 2008).

To our knowledge, only two studies using mortality salience manipulations have focussed on substance use. In a study by Hirschberger and colleagues, participants indicated how willing they were to try an array of drugs, ranging from alcohol and cigarettes to ecstasy and cocaine (Hirschberger, Florian, Mikulincer, Goldenberg, & Pyszczynski, 2002). Three different scenarios were presented, in which drugs were being offered either under medical supervision by the University for research purposes, or by a close friend, or by a stranger at a party. When mortality was salient, men were more willing to use drugs in all three scenarios. For women, no effect was found. Cox and colleagues (Cox, Arndt, Goldenberg, & Piasecki, 2008) studied effects of mortality salience on smoking behaviour of casual and habitual smokers. They found that, when mortality was salient, casual smokers reduced their smoking behaviour, while habitual smokers increased their smoking. It can be reasoned that for habitual smokers, smoking is part of their worldview, and therefore serves as a distal defence. The current study further investigates substance use as a distal defence, with alcohol being the drug of interest and subliminal priming the means by which mortality salience was induced.

This study

In this study, mortality was made salient by priming participants with pictures of faces of dead people (mortality salience condition). Results were compared with a neutral control condition in which neutral faces were shown, and a negative affect contrast condition with painful faces. This last condition was included to distinguish between mortality salience and a general negative priming effect. In all conditions, the pictures were shown for 16 milliseconds and masked by neutral pictures. Using subliminal priming to

induce mortality salience has the advantage that participants are not aware of the manipulation and therefore cannot bias the results. Additionally, as death thoughts do not become consciously accessible, distal defences are activated without a delay or distraction (Arndt et al., 2002; Arndt et al., 1997b). In earlier experiments (Arndt, Allen, & Greenberg, 2001; Arndt et al., 2002; Arndt, Greenberg, Pyszczynski, & Solomon, 1997a), subliminal priming with death-related words successfully induced mortality salience. In this study, pictures of faces were presented as was done by Winkielman, Berridge, and Wilbarger (2005).

Effects of the priming procedure on desire to drink alcohol were measured with an alleged tasting session (similar to Marlatt, Demming & Reid, 1973), in which participants tasted and rated four drinks. The drinks were an alcoholic drink (beer), a placebo (non-alcoholic beer), a soft drink and an anti-placebo (soft drink with vodka). This within-subjects variety of the balanced placebo design (Marlatt & Rohsenow, 1980) was used in order to distinguish between the effects of expecting to drink alcohol and actually drinking alcohol. Dependent variables were the amount consumed and the ratings of the drinks. The design of the study was approved by the Institutional Review Board (Maastricht University).

It was expected that participants in the death condition would drink significantly more of the alcoholic beverages, and rate the alcoholic beverages more positively than participants in the neutral and pain conditions. Yet, according to TMT, a distal defence against death terror is only to be expected if self-esteem is low. Therefore, the mortality salience effect was expected to occur only in those participants with low self-esteem. Thus, the first hypothesis was that there would be a significant interaction between priming condition and self-esteem.

In previous terror management studies, mortality salience manipulations did not alter conscious affect. Therefore, it was not expected that the priming procedure used in this study would have an effect on subjective mood, which was measured at several points in the experiment. Hence, the second hypothesis was that mood would not change after the priming procedure (cf. Winkielman et al., 2005). The third hypothesis was that the primes used in the study would not reach conscious awareness, because they were shown for only 16 milliseconds, using both forward and backward masks.

Method

Participants

Given less problematic ethical procedures for drinking alcohol in males (no risk of pregnancy) and the fact that heavy drinking is especially prevalent in male students, only men were recruited, resulting in a convenience sample of male students. Participants were recruited by posters, flyers and e-mails which presented the research as a combination of two independent experiments: a computer task and a tasting session with several drinks. Potential participants were administered a brief telephone interview to estimate their weekly alcohol use. Only students with an above average alcohol consumption of at least 12 Dutch standard drinks (containing approximately 10 grams of ethanol per drink) per week were included. Sixty male students with a mean age of 21.7 years (± 5.2 , range 18-45) participated. Average alcoholic consumption per week was 28.5 (± 11.4) drinks. All participants were Caucasian. Three participants had to be excluded from the analyses; two of them completed the tasks in the wrong order, and the third could not complete the tasks because of language problems. All other participants were fluent in Dutch. This left an analytic sample of 57 participants, 19 per condition. Background characteristics of the sample can be found in Table 1.

Table 1 Background characteristics of the sample

Variable	M	SD
Age	21.70	5.22
Alcoholic drinks (per week)	28.50	11.42
Self-esteem	2.76	0.55
Self-esteem through alcohol	2.92	0.51
Amount of hunger (scale: 1-10)	5.16	1.66
Amount of thirst (scale: 1-10)	3.89	2.47
Affect (valence, neg-pos)	6.63	1.34
Affect (arousal, low-high)	5.02	1.40

Materials

Pictures in subliminal priming

The pictures of the neutral faces were the same as used by Winkielman et al. (2005) and were originally developed by Matsumoto and Ekman (1988). Only the Caucasian faces were used, because of the great majority of Caucasian students at Maastricht University. The pictures of painful and dead faces were taken from the internet and from the International Affective Pictures System (IAPS) CD-ROM (Lang, Bradley, & Cuthbert, 1995). We selected dead faces which were clearly dead, to ensure that they would be perceived as dead rather than as asleep. These faces had often been

mutilated. The pictures were adapted with Adobe Photoshop to resemble the neutral pictures as much as possible in all aspects except for the contents (face with neutral background). The faces are available upon request. The primes and masks were presented to the participants in a computer task (described in more detail later) developed in E-Prime (Schneider, Eschman, & Zuccolotto, 2002).

Questionnaires

Mood was measured several times during the experiment with affect grids (Russell, Weiss, & Mendelsohn, 1989). The affect grid is a single-item scale in the form of a grid, on which participants indicate their arousal and valence. In four studies, the affect grid showed adequate reliability, convergent validity, and discriminant validity (Russell, et al., 1989).

Self-esteem was measured with the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989). The internal consistency (Cronbach) of the scale was 0.89 in our sample.

Alcohol use was measured with a self-report questionnaire (Wiers, Hoogeveen, Sergeant, & Gunning, 1997). Participants indicated how many alcoholic beverages they had drunk on each day during the past week, and how many drinks they would normally consume on each day of the week. All beverages were converted to standard drinks. From these data, the average number of alcoholic drinks consumed per week was computed. Current thirst and hunger were assessed with a ten-point Likert scale.

Dependent variable: alcohol consumption

The tasting session included a light alcoholic beer (alcohol percentage of 3.5%), a non-alcoholic beer (placebo), a slightly sparkling soft drink, and the same soft drink mixed with 17.5 ml. vodka (alcohol percentage of 3.5%, anti-placebo). Drinks were prepared in a separate room, and were all presented in neutral glasses of 200 ml each.

Procedure

The experiment was always conducted in the afternoon, because most people do not appreciate drinking alcohol in the morning. Per session, up to four participants were tested. To ensure privacy they were seated in individual cubicles and all instructions were printed in a booklet, so they could work individually and at their own pace. First their blood alcohol level was measured using a calibrated breathalyser to ensure that they were sober at the start of the experiment (all participants were). Then the procedure of the study was explained and participants filled out informed consent. Next, they indicated their current thirst, hunger and mood on the affect grid.

After that, they proceeded with the subliminal priming task, which was presented as a gender classification task (as in Winkielman et al., 2005). Neutral male and female faces had to be categorised using two response keys. Unknown to the participants, each face was preceded by a briefly presented other face which was neutral, painful or dead. Every trial started with a 50-ms presentation of a black cross that served as a fixation point and a forward mask. The cross was then replaced by the prime stimulus, which was shown for 16 ms. The prime was backward masked by a neutral face (the target), which was shown for 400 ms. The participant then had to press a 'V' if this was a woman, or an 'M' if it was a man. In total, there were eight priming trials. More trials may cause habituation to the primes (Whalen, Rauch, Etcoff, McInerney, Lee, & Jenike, 1998; Winkielman et al., 2005). After the gender classification task, participants were again asked to indicate their mood (affect grid).

Directly after this, participants were presented with a tray with the four different beverages. They were told that they would get ten minutes to rate the drinks on the accompanying forms. They could choose which drink they wanted to start with, and how much they wanted to drink. They rated the taste of the drinks and answered some filler questions that were included to ensure that the task would take a while, leaving enough time for the participants to drink as much as they wanted. After ten minutes, the experimenter came to pick up the tray and measured the amount of the drinks that was consumed (in another room). Participants then filled in another affect grid, the alcohol use questionnaire and the RSES.

Participants then proceeded to a forced choice recognition task, designed to measure perceptibility of the subliminal primes. They were informed that they had been primed in the first part of the experiment, and were told that the upcoming task would also contain primes. Their task was to pay attention to the primes and pick the prime from two alternative faces. The forced choice task consisted of 20 trials, similar to the gender classification trials (50 ms fixation point, 16 ms prime, 400 ms backward mask). The only difference was that after each trial, two faces appeared on the screen, from which the participant had to choose the face that had been presented as the prime. In the end, all primes used in the experiment were shown once more, this time supraliminally, and participants were to indicate the valence and the amount of arousal that the pictures evoked. Then they were asked what they thought the experiment was about. Once more, participants' breath was measured, to assure that their blood alcohol level was below

legal limit. Participants were then debriefed, thanked and received a small monetary reward as compensation for their time.

Results

Manipulation checks

First it was checked whether there were any differences between the three conditions with respect to age, alcohol use, initial level of thirst and hunger, mood (both valence and arousal), self-esteem and self-esteem through alcohol. No such differences were found, all $ps > .20$. All participants rated the pictures on an affect grid, with valence scores ranging from 0 to 9. The neutral pictures were rated 5.9 on average, the pain pictures 2.5 and the death pictures 1.8. As expected, the neutral pictures differed significantly from the pain pictures, $t(56) = 16.89, p < .001$, and the death pictures, $t(56) = 20.89, p < .001$. However, the difference between the pain pictures and the death pictures was also significant, $t(56) = 2.37, p < .05$. The death pictures were thus rated significantly more negatively than the pain pictures and the neutral pictures. The average percentage correct on the forced choice task was 52.3%, which corresponds to 10.46 correct answers out of 20 trials. This score was found not to differ from chance level (10 items correct), $t(56) = 1.49, p = .142$, confirming the subliminal nature of the priming procedure used (Hypothesis 3).

In previous terror management research, mortality salience manipulations did not influence mood. The same was found for the present study. In repeated measure analysis, neither the effect of time ($F(1,54) = .407, p > .50$), nor the interaction between time and condition ($F(2,54) = .331, p >$

.50) were significant. Thus, there was no effect of priming on conscious mood as measured by the affect grid (Hypothesis 2).

Prediction of drinking

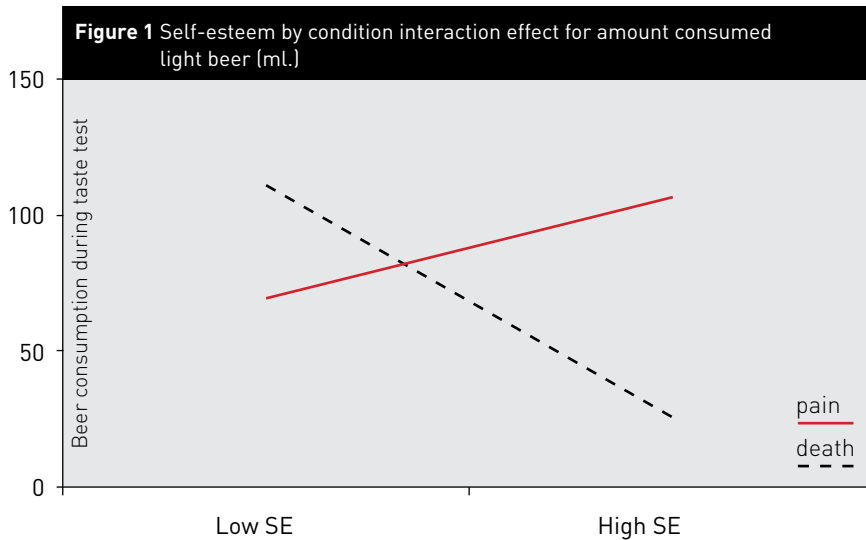
Separate hierarchical regression analyses were conducted for the amount of drinks consumed and for the subjective ratings of the drinks.

Amount consumed of the different drinks

Descriptive statistics for the amount consumed are presented in Table 2. These data were subjected to a mixed multivariate analysis of variance (MANOVA), with drink as within-subjects factor (four levels) and condition as between-subjects factor (3 levels). The amount consumed differed significantly between the drinks, $F(3,52) = 4.1, p = .01$, therefore the drinks were analysed separately. The light alcoholic beer was consumed most, the non-alcoholic beer was consumed the least (the exact means can be found in Table 2). During the debriefing, many participants indicated that they disliked the non-alcoholic beer and immediately tasted that it was a fake. In addition, there were no differences between the soft drink and the soft drink with alcohol. Our initial intention had been to analyse separately for 'think alcohol' and 'get alcohol' conditions (as in a balanced placebo design, cf. Marlatt & Rohsenow, 1980). However, given the fact that the placebo drink did not work for many participants and that our hypotheses are primarily about the effects of alcohol, we report the analyses for the condition in which people thought they drank alcohol and also received alcohol (light beer), and for the 'soft drink' condition, in which people believed they received a non-alcoholic drink, and also received a non-alcoholic drink.

Table 2 Descriptive statistics for amount consumed (in ml., possible values ranging from 0 to 200) and ratings of the drinks

	Amount consumed				Ratings			
	Overall	Neutral	Pain	Death	Overall	Neutral	Pain	Death
Light alcoholic beer								
- Mean	89.12	87.37	91.32	74.47	55.00	47.50	63.42	50.63
- SD	59.05	13.66	13.80	11.70	22.02	4.249	4.2504	5.173
Soft drink								
- Mean	72.84	63.68	53.16	56.84	58.35	61.61	60.474	57.79
- SD	53.77	9.58	7.26	13.66	22.20	2.6864	5.746	5.336
Non-alcoholic beer								
- Mean	63.25	102.63	72.89	49.21	38.04	37.44	41.73	39.00
- SD	52.33	15.16	13.87	9.10	25.21	5.157	6.130	6.356
Soft drink with vodka								
- Mean	76.80	95.00	52.37	59.21	57.17	61.67	57.37	56.68
- SD	59.67	14.38	6.78	12.56	20.92	4.345	5.188	5.272



Prediction of beer consumption

The regression analysis first included an array of covariates (thirst, hunger, mood, alcohol use, etc). If these variables did not significantly explain variance, they were deleted from the analysis. As the pain condition served as a negative emotion control condition, the pain and death conditions were coded into a dummy variable. A hierarchical regression analysis was conducted. One outlier was found, and removed from analysis. In the first step of hierarchical regression analysis, this dummy variable and self-esteem were entered. The resulting model was not significant ($p = .739$). In the second step, the interaction between these two variables was entered. Adding the interaction to the regression produced a significant change in explained variance, $\Delta R \text{ beta} = .255, p = .002$ (Table 3). This model was significant ($p = .014$). The interaction is shown in Figure 1. In the death condition, participants with low self-esteem drank more beer than those with high self-esteem. This confirms the second expectation that mortality salience would increase beer consumption for participants with low self-esteem (Hypothesis 2).

Prediction of soft drink consumption

The same hierarchical regression analysis was performed for the amount of soft drink consumed. The model with self-esteem and the dummy variable was not significant ($p = .239$). Adding the interaction did not produce a significant change in explained variance ($\Delta R \text{ beta} = .090, p = .063$) and the resulting model was not significant ($p = .095$) (Table 4). This is in line with the expectation that mortality salience would not affect the consumption of the soft drink, although it should be noted that a statistical trend was observed in the same direction.

Ratings of the drinks

Descriptive statistics for the ratings of the drinks are shown in Table 2. Taste data from one participant in the neutral condition were lacking. The data were subjected to a mixed MANOVA, with drink as within-subjects factor (four levels) and condition as between-subjects factor (3 levels). The taste ratings differed significantly between the drinks, $F(3,51) = 6.9, p < .001$. The alcoholic beer and both soft drinks were rated about equally positively, while the non-alcoholic beer was rated less positively (the exact means can be found in Table 2).

In keeping with the analyses of the amount consumed, we analysed the rating of the alcoholic beer and the soft drink, using the same hierarchical regression analyses as for the analyses of the amount consumed. The rating of

Table 3 Summary of hierarchical regression analysis for amount of beer consumed

Variable	B	SE B	t	p	
Step 1					
RSES	-2.443	17.205	-.025	-.142	.888
Dummy	-14.945	19.122	-.136	-.782	.440
Step 2					
RSES	33.212	18.328	.336	1.1812	.079
Dummy	-14.842	16.704	-.135	-.889	.381
Interaction	-108.865	32.026	-.620	-3.399	.002

$F(2, 34) = .306, p = .739, R^2 = .018$ for step 1, $F \text{ change}(1, 33) = 11.555, p = .002$, $R^2 \text{ change} = .255$ for step 2, RSES = Rosenberg Self-Esteem Scale.

Table 4 Summary of hierarchical regression analysis for amount of soft drink consumed

Variable	B	SE B	t	p	
Step 1					
RSES	13.751	14.103	.164	.975	.336
Dummy	-19.342	17.184	-.189	-1.126	.268
Step 2					
RSES	36.993	18.203	.441	2.032	.050
Dummy	-20.250	16.568	-.198	-1.222	.230
Interaction	-52.529	27.365	-.410	-1.920	.063

$F(2, 35) = 1.493, p = .239, R^2 = .079$ for step 1, $F \text{ change}(1, 34) = 3.685, p = .063$, $R^2 \text{ change} = .090$ for step 2, RSES = Rosenberg Self-Esteem Scale.

the alcoholic beer was not predicted significantly by the independent variables or by the interaction between these variables, nor was the rating of the soft drink. These results do not support the expectation that mortality salience would increase the ratings of the beer for participants that have low self-esteem (Hypothesis 2).

Discussion

The main results of the present study were that the Terror Management Theory for Alcohol was partially supported. Specifically, the main hypothesis of the study was that the subliminal presentation of faces of dead people would increase both consumption and positive ratings of alcohol, in comparison with subliminally presented neutral faces or painful faces, but only for people with low self-esteem. The results for the consumption of the drinks indeed supported this hypothesis. It was found that participants with low self-esteem drank more beer in the death condition than participants with high self-esteem. This was not found for soft drinks (although it should be noted that a trend in the same direction was observed). The results for the ratings of the drinks did not support the main hypothesis. No effects of condition, self-esteem or interaction were found for the ratings of beer and soft drinks.

Together these findings indicate that the subliminally presented faces did have some effect, even though they did not reach awareness, as was established both with a subjective criterion (asking the participants whether they had seen anything) and an objective criterion (the forced choice task). Also, it was shown that the priming procedure did not alter conscious affect, as in other terror management studies (Hypothesis 3).

The results of this study only partially support the Terror Management Theory of Alcohol. This might be explained by the fact that the student participants in this study may not have been heavy drinkers in the sense that their worldviews are alcohol related. When students graduate, their heavy drinking pattern often changes, parallel to the way their personal life changes at that moment. Because their heavy drinking pattern is temporary, it might be that their worldview does not centre on alcohol. Non-student heavy drinkers might differ from students in that their drinking pattern is permanent; their whole life is centred around drinking, as is their worldview.

The present study has several limitations. First of all, the balanced placebo design did not work as expected, which led us to discard the results of the non-alcoholic beer and the soft drink with

vodka. Second, the pictures used as death primes were evaluated more negatively than the pictures used as pain primes, which might have influenced the priming effects. And third, the experiment had to be conducted in a laboratory because of the priming method. The laboratory setting might have caused participants to enter a rational state of mind, which stands in the way of mortality effects (Simon et al., 1997).

As the results of this study only partially support the Terror Management Theory of Alcohol, future research is needed to examine the value of this theory. Clear results on this topic could have implications for treatment of alcohol abuse. Treatments could focus on establishing another, healthier worldview and on increasing self-esteem regarding that worldview, making alcohol redundant as a defence against death terror. This could be related to humanistic worldviews or to existing religions, such as Christianity as in Alcoholics Anonymous or Buddhism as in some recent interventions (Marlatt, 2002).

Author's note

This study was done as a Master's thesis at Maastricht University by Francine Aarts, supervised by Reinout W. Wiers, now at the University of Amsterdam. The authors wish to thank Lotte Voorham for cooperation in testing. Wiers was funded by 'VIDI' grant 452.02.005 from the Dutch National Science Foundation (NWO), at the time of the study, and now by 'VICI' grant, 453.08.001.

References

- Arndt, J., Allen, J. J. B., & Greenberg, J. (2001). Traces of terror: Subliminal death primes and facial electromyographic indices of affect. *Motivation and Emotion*, 25, 253-277.
- Arndt, J., Goldenberg, J. L., Greenberg, J., Pyszczynski, T., & Solomon, S. (2000). Death can be hazardous to your health: Adaptive and ironic consequences of defenses against the terror of death. In P.R. Duberstein & J.M. Masling (Eds.), *Psychodynamic Perspectives on Sickness and Health* (pp. 201-257). Washington, DC: American Psychological Association.
- Arndt, J., Greenberg, J., & Cook, A. (2002). Mortality salience and the spreading activation of worldview-relevant constructs: Exploring the cognitive architecture of terror management. *Journal of Experimental Psychology*, 131, 307-324.
- Arndt, J., Greenberg, J., Pyszczynski, T., & Solomon, S. (1997a). Subliminal exposure to death-related stimuli increases defense of the cultural worldview. *Psychological Science*, 8, 379-385.
- Arndt, J., Greenberg, J., Solomon, S., Pyszczynski, T., & Simon, L. (1997b). Suppression, accessibility of death-related thoughts, and cultural worldview defense: Exploring the psycho-dynamics of terror management. *Attitudes and Social Cognition*, 73, 5-18.
- Booth, J., & Martin, J. E. (1998). Spiritual and religious factors in substance use, dependence, and recovery. In H.G. Koenig (ed.), *Handbook of Religion and Mental Health*. (pp. 175-200). San Diego, CA: Academic Press.
- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment*, 6, 117-128.
- Cox, C. R., Arndt, J., Goldenberg, J. L., & Piasecki, T. (2008). The effect of mortality salience on smoking intensity among habitual and occasional smokers. *Manuscript in preparation*.
- Crocker, J. (2002). The costs of seeking self-esteem. *Journal of Social Issues*, 58, 597-615.
- Dechesne, M., Pyszczynski, T., Arndt, J., Ransom, S., Sheldon, K. M., van Knippenberg, A., & Janssen, J. (2003). Literal and symbolic immortality: The effect of evidence of literal immortality on self-esteem striving in response to mortality salience. *Journal of Personality and Social Psychology*, 84, 722-737.
- George, L.K., Larson, D.B., Koenig, H.G., & McCullough, M.E. (2000). Spirituality and health: What we know, what we need to know. *Journal of Social and Clinical Psychology*, 19, 102-116.
- Goldenberg, J. L., & Arndt, J. (2008). The implications of death for health: A terror management health model for behavioral health promotion. *Psychological Review*, 115, 1032-1053.
- Gorsuch, R. L. (1995). Religious aspects of substance abuse and recovery. *Journal of Social Issues*, 51, 65-83.
- Greenberg, J., Arndt, J., Simon, L., Pyszczynski, T., & Solomon, S. (2000). Proximal and distal defenses in response to reminders of one's mortality: Evidence of a temporal sequence. *Personality and Social Psychology Bulletin*, 26, 91-99.
- Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D., (1990). Evidence for terror management theory II: The effects of mortality salience on reactions on those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology*, 58, 308-318.
- Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. In Mark Zanna (Ed.), *Advances in Experimental Social Psychology*, 29, (pp. 61-139), Orlando, FL: Academic Press.
- Harmon-Jones, E., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., & McGregor, H. (1997). Terror management theory and self-esteem: Evidence that increased self-esteem reduces mortality salience effects. *Journal of Personality and Social Psychology*, 72, 24-36.
- Hirschberger, G., Florian, V., Mikulincer, M., Goldenberg, J. L., & Pyszczynski, T. (2002). Gender differences in the willingness to engage in risky behavior: A terror management perspective. *Death Studies*, 26, 117-141.
- Lang, P. J., Bradley, M. M., & Cuthbert, B. (1995). *International Affective Picture System*. Gainesville: University of Florida, Center for Research in Psychophysiology.
- Luhtanen, R. K., & Crocker, J. (2005). Alcohol use in college students: Effects of level of self-esteem, narcissism, and contingencies of self-worth. *Psychology of Addictive Behaviors*, 19, 99-103.
- Marlatt, G. A. (2002). Buddhist philosophy and the treatment of addictive behavior. *Cognitive and Behavioral Practice*, 9, 44-50.
- Marlatt, G. A., Demming, B., & Reid, J. B. (1973). Loss of control drinking in alcoholics: An experimental analogue. *Journal of Experimental Psychology*, 81, 233-241.
- Marlatt, G. A., & Rohsenow, D. J. (1980). Cognitive processes in alcohol use: Expectancy and the balanced placebo design. In N. K. Mellow (Ed.), *Advances in substance abuse: Behavioral and Biological Research* (pp. 159-199). Greenwich, CI: JAI Press.
- Matsumoto, D., & Ekman, P. (1988). *Japanese and Caucasian facial expressions of emotion (JACFEE) and neutral faces (JACNeuF)*. Report available from Intercultural and Emotion Research Laboratory, Department of Psychology, San Francisco State University.
- McGregor, H. A., Lieberman, J. D., Greenberg, J., Solomon, S., Arndt, J., Simon, L., & Pyszczynski, T. (1998). Terror Management and aggression: Evidence that mortality salience motivates aggression against world-view threatening others. *Journal of Personality and Social Psychology*, 74, 590-605.
- Mikulincer, M., & Florian, V. (2002). The effects of mortality salience on self-serving attributions – evidence for the function of self-esteem as a terror management mechanism. *Basic and Applied Social Psychology*, 24, 261-271.
- Pullen, L. M. (1994) The relationships among alcohol abuse in college students and selected psychological/demographic variables. *Journal of Alcohol and Drug Education*, 40, 36-50.
- Rosenberg, M. (1989). *Society and the Adolescent Self-Image*. Revised Edition. Middletown, CT: Wesleyan University Press.
- Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., & Lyon, D. (1989). Evidence for Terror Management Theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology*, 57, 681-690.

- Routledge, C. Arndt, J., & Goldenberg, J. L. (2004). A time to tan: Proximal and distal effects of mortality salience on sun exposure intentions. *Personality and Social Psychology Bulletin*, 30, 1347-1358.
- Russell, J.A., Weiss, A., & Mendelsohn, G. A. (1989). Affect grid: A single-item scale of pleasure and arousal. *Journal of Personality and Social Psychology*, 57, 493-502.
- Schneider, W., Eschman, A., & Zuccolotto, A. (2002). *E-Prime User's Guide*. Pittsburgh: Psychology Software Tools Inc.
- Simon, L., Greenberg, J., Harmon-Jones, E., Solomon, S., Pyszczynski, T., Arndt, J., & Abend, T. (1997). Terror management and cognitive-experiential self-theory: Evidence that terror management occurs in the experiential system. *Journal of Personality and Social Psychology*, 72, 1132-1146.
- Taubman Ben-Ari, O., Florian, V., & Mikulincer, M. (1999). The impact of mortality salience on reckless driving: A test of terror management mechanisms. *Journal of Personality and Social Psychology*, 76, 35-45.
- Taubman Ben-Ari, O., Florian, V., & Mikulincer, M. (2000). Does a threat appeal moderate reckless driving? A terror management perspective. *Accident Analysis and Prevention*, 32, 1-10.
- Whalen, P. J., Rauch, S. L., Etcoff, N. L., McInerney, S. C., Lee, M.B., & Jenike, M. A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. *The Journal of Neuroscience*, 18, 411-418.
- Wiers, R. W., Hoogveen, K. J., Sergeant, J. A., & Gunning, W. B. (1997). High and low dose expectancies and the differential associations with drinking in male and female adolescents and young adults. *Addiction*, 92, 871-888.
- Wiers, R. W., & Stacy, A. W. (Eds.) (2006a). *Handbook of implicit cognition and addiction*. Thousand Oaks, CA: SAGE Publishers.
- Wiers, R. W., & Stacy, A. W. (2006b). Implicit cognition and addiction. *Current Directions in Psychological Science*, 15, 292-296.
- Wills, T. A. (1994). Self-esteem and perceived control in adolescent substance use: Comparative tests in concurrent and prospective analyses. *Psychology of Addictive Behaviors*, 8, 223-234.
- Winkielman, P., Berridge, K. C., & Wilbarger, J. L. (2005). Unconscious affective reactions to masked happy versus angry faces influence consumption behavior and judgments of value. *Personality and Social Psychology Bulletin*, 31, 121-135.
- Zimmerman, M. A., Copeland, L. A., Shope, J. T., & Dielman, T. E. (1997). A longitudinal study of self-esteem: Implications for adolescent development. *Journal of Youth and Adolescence*, 26, 117-141.

Enhancing implicit self-esteem in children: Can a smile make you feel worthwhile?

These experiments represent a first exploration of implicit and explicit self-esteem in children, and test their malleability using the evaluative conditioning procedure that was successfully employed in adults (Baccus, Baldwin, & Packer, 2004). Experiment 1 showed that children for whom self-relevant information was repeatedly paired with smiling adult faces displayed somewhat higher implicit self-esteem and less aggression than controls. These findings were not replicated, however, in Experiment 2 that used a pre-post test design. In Experiment 3, repetition of the conditioning procedure did not produce significant effects on self-esteem or psychological functioning. Overall, pairing smiling faces with self-relevant information had no effect on children's implicit or explicit self-esteem, and no consistent relations between implicit and explicit self-esteem measures were found. Implications and future research are discussed.

Where: Netherlands Journal of Psychology, Volume 66, 11-25

Received 21 April 2009; accepted 11 June 2009

Keywords: Implicit self-esteem; Self-esteem enhancement; Evaluative conditioning; Children; Aggression

Authors: Jorg Huijding*, Arjan E. R. Bos** and Peter Muris*

Self-esteem, the overall evaluation of one's worth or value as a person, is a construct that plays an important role in the mental and social development of children and adolescents (e.g., Harter, 1999). Research has shown that high self-esteem is related to parental approval, peer-support, adjustment, and success in school (Steinberg & Sheffield Morris, 2001). Conversely, children with low self-esteem have been found to be less successful in school and are less accepted by their peers (e.g., Mann, Hosman, Schaalma, & De Vries, 2004; Bos, Muris, Mulken, & Schaalma, 2006). In addition, low self-esteem is related to several forms of child and adolescent psychopathology including anxiety (Beck, Brown, Steer, Kuyken, & Grisham, 2001; Muris, Meesters, & Fijen, 2003a), depression (Harter, 1993; Mann et al., 2004), and eating pathology (e.g. Muris, Meesters, Van de Blom, & Mayer, 2005; Stice, 2002). Self-esteem has also been linked with externalising problems such as aggressive and delinquent behaviours. However, there is still debate concerning the exact nature of this relation. While some researchers have found low self-esteem to be related to externalising problems (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005), others have argued that externalising problems are

related to high self-esteem as a result of egotism (Baumeister, Smart, & Boden, 1996). The majority of research on self-esteem has focused on self-reported, or explicit, self-esteem (see Butler & Gasson, 2005 for an overview), which refers to conscious and deliberate evaluations of the self, self-relevant objects and situations. More recently, however, it is increasingly acknowledged that there are also more automatic self-evaluative processes that are not necessarily conscious (e.g., Greenwald & Banaji, 1995; Koole, Dijksterhuis, & Van Knippenberg, 2001; Dijksterhuis, 2006). Such self-evaluative processes have been subsumed under the concept of implicit self-esteem. Although the concept of implicit self-esteem is relatively young, there is accumulating evidence that it may be an important determinant of social and mental functioning (see for a review Koole & DeHart, 2007). For instance, Conner and Barrett (2005) demonstrated that implicit but not explicit self-esteem predicted participants' spontaneous daily experiences of a range of negative emotions such as boredom, shame, anger and sadness over an extended period of time. Other studies have shown that individuals with low implicit self-esteem show a lower level of aspiration after failure (Greenwald & Farnham, 2000), and

* Erasmus University
Rotterdam, the Netherlands

** Maastricht University,
the Netherlands
Correspondence to: Jorg
Huijding, Institute of Psy-
chology, Erasmus University
Rotterdam, PO Box 1738,
3000 DR Rotterdam,
the Netherlands,
e-mail: huijding@fsw.eur.nl

experience more anxiety during a very personal interview (Spalding & Hardin, 1999) compared with individuals with high implicit self-esteem. In addition, individuals who score high on a measure of social anxiety show lower implicit self-esteem than individuals who score low on such a measure (De Jong, 2002; Tanner, Stopa, & De Houwer, 2006). Taken together, the existing data suggest that both a low explicit and a low implicit self-esteem are associated with a range of negative consequences. Importantly, the effects of implicit and explicit self-esteem seem to be complementary rather than identical (Dijksterhuis, Albers, & Bongers, 2007). That is, they each appear to explain unique variance on various outcome measures. This underlines the importance of including measures of both implicit and explicit self-esteem when studying the effects of self-esteem on psychological functioning.

Given the risk that low self-esteem may have for a healthy development, several interventions have been developed that aim to enhance children's self-esteem (see Bos et al., 2006). A meta-analysis by Haney and Durlak (1998) showed that such interventions have modest effects on explicit self-esteem (with a mean effect size of 0.27). Recent evidence in the adult literature suggests that implicit self-esteem can also be successfully enhanced (Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004). For instance, Baccus et al. (2004) found that implicit self-esteem can be increased using an evaluative conditioning paradigm in which self-relevant stimuli (e.g., first name, date of birth) were consequently paired with pictures of smiling faces, and other-relevant stimuli were always followed by neutral or angry faces. Interestingly, this procedure not only seemed to promote implicit self-esteem relative to other-esteem, but also appeared to have an effect on a measure of aggression. That is, participants who received positive reinforcement during the conditioning task were less aggressive than participants for whom self and other-relevant stimuli were equally often followed by pictures of smiling, neutral and angry faces. This suggests that implicit self-esteem can be enhanced and that this positive effect generalises to behaviours that are assumed to be related to self-esteem, such as aggression. Meanwhile, as self-relevant stimuli were always followed by smiling faces, but other-relevant stimuli always by negative and neutral faces it is difficult to know whether the effects were due to a strengthening of *positive* associations with the self, a strengthening of *negative* associations with others, or a combination of both¹. In addition, there are no published studies that have examined whether implicit self-esteem can be enhanced in children and adolescents. In

fact, to our knowledge, there are no published studies at all that focus on implicit self-esteem in children, and, consequently, there are virtually no data available concerning the relation between implicit and explicit self-esteem in children, and the psychological correlates of implicit self-esteem outside adulthood.

The main purpose of the present series of experiments was to take a first step in filling the gap in our knowledge concerning implicit self-esteem in childhood by assessing implicit and explicit self-esteem in various samples of primary school children. We employed the conditioning paradigm that was successfully used by Baccus and colleagues (2004) and tested whether this experimental procedure can be used to enhance implicit and explicit self-esteem in primary school children. In order to test the net effect of the positive conditioning procedure for self-relevant stimuli, the conditioning procedure of Baccus et al. (2004) was slightly modified. That is, instead of always pairing other-relevant stimuli with negative or neutral faces, we paired these stimuli equally often with positive, negative or neutral faces (see method section of Experiment 1 for details). In all experiments we focused on youths in middle childhood, because children in this age range are assumed to be capable of integrating both positive and negative evaluations about themselves and as such form a more realistic representation of their overall self-worth (Harter, 1999). As such, this age range seems suitable for examining inter-individual differences in implicit and explicit self-esteem, and the relations between both types of self-esteem and other variables of interest, such as aggression and psychological functioning. Younger children typically make very positive self-attributions, due to an inability to distinguish between the real and the ideal self, an overestimation of their own virtuosity, and all-or-nothing thinking (Harter, 1999).

Experiment 1 was designed to test whether we could replicate the basic findings of Baccus et al. (2004) in a group of primary school children. Children were given a conditioning task that closely followed the procedure as described by these researchers. Subsequently, children completed measures of implicit self-esteem, explicit self-esteem, and aggression. Because Experiment 1 only included post-assessments and any lack of effects might be caused by differences between the experimental and the control group prior to the conditioning procedure, Experiments 2 and 3 used a pre-post test design. As a subsidiary issue, Experiment 2 was designed to test whether any effects of the conditioning procedure on implicit or explicit self-esteem and aggression

¹ Note that even though Baccus and colleagues analysed only the 'self' trials in order to avoid this problem, research on the implicit measure that was used suggests that the approach of analysing just trials from one of the two target categories is not a valid one (Nosek, et al., 2007). As a result, one cannot conclude that the results of this earlier study were entirely about associations with the self only.

would be stable over longer time periods. Therefore, this experiment included a follow-up assessment of one month. Finally, Experiment 3 tested whether the effect on children's self-esteem and general psychological functioning can be enhanced if the conditioning task is completed repeatedly. Because previous studies consistently observed differences between boys and girls in explicit self-esteem (e.g., Kling, Hyde, Showers, & Buswell, 1999; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002), we examined the influence of gender in all experiments.

Experiment 1

Method

Participants

A total of 133 primary school children (67 boys, 66 girls) aged between 9 and 12 years ($M = 11.2$, $SD = 0.71$) participated after obtaining written consent from the children themselves and their parents. All participants were randomly assigned to either the experimental or the control condition. There were no differences with regard to gender distribution, $\chi^2(1, N = 133) < 1$, and age, $t(131) < 1$, between the experimental and the control condition.

Materials

Explicit self-esteem. To assess global self-esteem the children completed the Dutch version of the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES consists of ten items that assess global feelings of self-esteem on a four-point Likert scale. The internal consistency of the RSES was acceptable in the present sample (Cronbach's $\alpha = .67$).

Children also completed the Dutch version of the Self-Perception Profile for Children (SPPC; Harter, 1985; Veerman, Straathof, Treffers, Van den Bergh, & Ten Brink, 1997). The 36-item SPPC is the most widely used self-report measure for assessing self-esteem in youths, and the Dutch version of this scale has satisfactory reliability with good internal consistency and test-retest stability (Muris, et al., 2003). In the present sample the internal consistency of the total scale was good ($= .90$).

Implicit self-esteem. Similar to Baccus et al. (2004), the present experiment employed the self-esteem IAT (Greenwald & Farnham, 2000) as a measure of implicit self-esteem. The IAT was adapted especially for the use with children following the procedure described by Field and Lawson (2003). The tasks were run on laptop computers using E-prime software (Version 1.0, Schneider, Eschman, & Zuccolotto, 2002) to ensure high precision accuracy of reaction time recordings. The IAT required children to categorise words into

self and other categories, and *positive* and *negative* categories using two response keys. In accordance with the standard IAT design (Greenwald, McGhee, & Schwarz, 1998), the task consisted of two critical sets of trials, the *compatible block* and the *incompatible block*. In the *compatible block*, children were asked to use one key to categorise self (e.g., self, me, my) and positive words (e.g., nice, good, smart), and the other key to categorise other (e.g., other, they, them) and negative words (e.g., stupid, dumb, bad). In the *incompatible block*, children were instructed to use one key to categorise self and negative words and the other key to categorise other and positive words. The idea behind the task is that participants will perform better when the two concepts that share a response key are somehow associated in memory then when they are not. Following this, implicit self-esteem can be computed as the difference in performance between the compatible and incompatible blocks (see for details Greenwald, Nosek, & Banaji, 2003).

The entire IAT procedure consisted of seven phases: (1) practice categorising *self* and *other* words (10 trials); (2) practice categorising *positive* and *negative* words (10 trials); (3) practice the *compatible* categorisation of all words (20 trials); (4) critical *compatible* categorisation of all words (40 trials); (5) practice of reversed key assignments for the self and other words (30 trials); (6) practice the *incompatible* categorisation of all words (20 trials); (7) critical *incompatible* categorisation of all words (40 trials). Words were categorised by pressing the 'E' or the 'I' on the keyboard. Key assignments were counterbalanced across participants. Before each stage children received instructions on the response keys that represented each of the categories, and were then asked to categorise the words as fast and accurately as possible. To remind children of these instructions during the task, category labels were shown in the upper left and right corners of the screen throughout each stage. Each trial started with the presentation of a fixation dot in the middle of the computer screen. After 500 ms the fixation dot was replaced by the stimulus word. If a word was miscategorised then a red 'X' appeared under the stimulus. Both the stimulus and the cross then remained on the screen until the correct categorisation was made. Note, however, that only the latency until the initial response was recorded. After the correct categorisation was made the stimulus was immediately replaced by the fixation dot for the next trial. In total the task took about ten minutes for the children to complete.

An IAT score was calculated for each child on the basis of the scoring algorithm as proposed by

2 Similar to Dijksterhuis (2004) the order of compatible and incompatible blocks was not counterbalanced, because the focus of the present study was not on absolute IAT effects but rather on the comparison of IAT effects between the two conditions. The major advantage of using only one IAT version was that between-subjects method variance was reduced resulting in more power.

Table 1 Mean scores (standard deviations) on self-esteem and aggression measures for both conditions in Experiment 1

	Condition	
	Experimental (n = 67)	Control (n = 66)
RSES	31.4 (4.1)	30.8 (3.8)
SPPC	98.4 (1.5)	100.0 (1.5)
IAT	0.76 (0.32) ^a	0.68 (0.28) ^b
Aggression	1233.0 (172.7) ^a	1817.2 (172.1) ^b

RSES = Rosenberg Self-Esteem Scale; SPPC = Self-Perception Profile for Children; IAT = Implicit Association Test; Aggression = aggression index based on the Hot Sauce test. For the SPPC and Aggression estimated marginal means (standard errors) are reported. IAT scores are similar to Cohen's *d* for the difference between the compatible (self + positive, others + negative) and incompatible (self + negative, others + positive) blocks, with positive scores indicating more positive self-esteem. For the IAT *n* = 61 for the experimental and *n* = 64 for the control condition. For Aggression *n* = 63 for both the experimental and the control condition. Means in the same row with different superscripts differ with $p < .1$.

Greenwald and colleagues (2003). More specifically, we calculated the recommended D4 measure that includes both combined practice and test phases and replaces errors with a 600 ms penalty. The Spearman-Brown corrected split-half reliability of this measure was reasonable ($r = .59$). Data of five children in the experimental and three children in the control condition were excluded from the analyses because they had more than 25% errors on the IAT. In addition, data from one child in the experimental group was excluded because he was more than 3 standard deviations removed from the mean score of his group.

Aggression. Aggression was measured by means of an adapted version of the 'hot sauce test' (Lieberman, Solomon, Greenberg, & McGregor, 1999). Under a cover story that we wanted their help in a taste experiment, children were presented with a cup that was filled for a quarter with a red, hot (spicy) sauce. Children were told that another participant had tasted and rated the sauce as very spicy, and had then decided for them that they should eat this amount of it. They were then asked to taste the sauce and indicate how much sauce they would like this other participant to eat in return. Children indicated the amount of sauce on a drawing of a cup. Finally, each child rated on a 100 mm Visual Analogue Scale (VAS) how much they liked or disliked the sauce (0 = very tasty, 100 = very nasty). As an index of aggression we took the product of the amount of sauce (distance in mm from the bottom of the cup up to the line marked by the children) and the VAS rating of the sauce.

Data from seven children (3 from the experimental and 4 from the control condition) were missing because these children refused to complete the hot sauce task.

Conditioning procedure. The conditioning procedure was designed after Baccus et al. (2004). Participants started by entering personal information about themselves (i.e., first name, last name, date of birth, place of birth, first letter of first name) into the computer. Then they were told that a word would appear randomly in one of the quadrants on the computer screen and that their task was to click on that word as fast as possible. They were instructed that clicking on the correct quadrant would cause an image to be displayed briefly (for 400 ms.) in that quadrant. This procedure was repeated for 240 trials. The presented words were randomly chosen from the personal information that was entered at the start of the session (self-relevant words) as well as from a pre-programmed list of other-relevant words that fitted the same categories. Half of the trials were self-relevant and the other half were other-relevant. In the experimental condition self-relevant items were always followed by an image of a smiling adult face (120 trials), whereas other-relevant items were followed randomly by an image of a smiling, angry or neutral adult face (120 trials). In the control condition all items (self and other-relevant) were followed randomly by an image of a smiling, angry or neutral adult face. The faces were equally often male and female and derived from the MacBrain Face Stimulus Set (NimStim)³. The conditioning procedure took about seven minutes to complete.

Procedure

All children were tested individually in a separate room at their school. After the initial instruction, participants first completed the RSES. Then, children were seated in front of the laptop computer and completed either the experimental or the control version of the conditioning task. Following the conditioning task they completed the IAT. Upon finishing the IAT, participants were asked to fill in the Self-Perception Profile for Children. Finally, the children completed the 'hot-sauce test'. Children needed about 30 minutes to complete all tests.

Results

Pre-experimental group differences

Descriptive statistics are shown in Table 1. A 2 (Condition: experimental vs. control) × 2 (Gender: girls vs. boys) analysis of variance (ANOVA) performed on the RSES total score only yielded a significant main effect of Gender, $F(1, 129) = 4.7$, $p < .05$, partial $\eta^2 = .04$: boys displayed significantly

³ Stimuli can be obtained from the first author. The MacBrain Face Stimulus Set was developed by Nim Tottenham and supported by the John D. and Catherine T. MacArthur Foundation Research Network on Early Experience and Brain Development. Please contact Nim Tottenham at tott0006@tc.umn.edu for more information concerning the MacBrain Face Stimulus Set.

higher RSES scores ($M = 30.8$, $SD = 3.1$) than did girls ($M = 29.6$, $SD = 3.1$). Importantly, there were no group differences on self-esteem before the conditioning procedure. That is, the main effect of Condition and the interaction of Condition with Gender were both non-significant, both $F(1, 129) < 1$.

Post-experimental group differences

SPPC. In order to examine children's explicit self-esteem after the experimental manipulation, SPPC total scores were subjected to a 2 (Condition) \times 2 (Gender) ANCOVA with the pretest RSES scores as the covariate. As can be seen in Table 1, children in the experimental and the control condition had comparable SPPC scores, $F(1, 126) < 1$. As indicated by a significant main effect of Gender, $F(1, 126) = 4.0$, $p < .05$, partial $\eta^2 = .03$, boys displayed generally higher SPPC scores (estimated marginal $M = 101.3$, $SE = 1.7$) than did girls (estimated marginal $M = 97.1$, $SE = 1.3$). The covariate was significant, $F(1, 126) = 29.6$, $p < .01$, $\eta^2 = .19$.

IAT. A 2 (Condition) \times 2 (Gender) ANOVA performed on Children's IAT scores revealed that the main effect of Condition showed a trend towards significance, $F(1, 125) = 2.8$, $p = .097$, partial $\eta^2 = .02$. Table 1 shows that children in the experimental condition exhibited somewhat higher IAT scores than children in the control condition. The main effect of Gender and the Condition \times Gender interaction were non-significant, both $F(1, 123) < 1$.

Aggression. A 2 (Condition) \times 2 (Gender) ANCOVA of the aggression data, with the RSES scores as the covariate, yielded a significant main effect of Condition, $F(1, 121) = 5.7$, $p < .05$, partial $\eta^2 = .05$. As expected, children in the experimental condition showed less aggression than children in the control condition (see also Table 1). The covariate was also significant, $F(1, 121) = 5.4$, $p < .05$, partial $\eta^2 = .04$. The main effect of Gender and the interaction of Condition \times Gender were both non-significant, both $F(1, 121) < 1$. It is important to note that the two groups did not differ in their evaluation of the sauce, $t(124) < 1$.

Relation between Implicit and Explicit Self-esteem. The IAT was not significantly correlated with either the pretest RSES, $r = -.03$, or the posttest SPPC, $r = .06$. The RSES and SPPC did show a significant correlation, $r = .46$, $p < .01$, indicating that higher self-reported self-esteem on the pretest was associated with higher self-reported self-esteem on the posttest.

Relation between self-esteem and aggression. The RSES showed a significant negative correlation with the

measure of aggression ($r = -.22$, $p < .05$), indicating that lower levels of self-reported self-esteem at pretest were associated with higher levels of aggression at posttest. Neither the SPPC nor the IAT correlated significantly with the measure of aggression, $r = -.08$ and $r = .04$, respectively.

Discussion

Consistent with Baccus et al. (2004), participants who completed the experimental conditioning procedure in which self-relevant stimuli were consistently paired with smiling faces, tended to show enhanced implicit self-esteem and less aggression as compared with participants in the control condition. This is the first tentative demonstration that implicit self-esteem may be experimentally enhanced in children, and that a conditioning procedure may have an effect on aggression. It should be noted, however, that both effects were rather small and certainly require replication. In addition, no meaningful relations were found between aggression and measures of implicit and explicit self-esteem, which casts doubt on the idea that self-esteem is related to aggression in this age group. Meanwhile, an alternative explanation is that the currently used measure of aggression, the hot sauce test, did not provide a valid index of aggression in the present context. That is, although the hot sauce test has proven to be a reliable and valid measure of behavioural aggression in adults (Lieberman et al., 1999), it may have been too abstract and complex for children of this age. Related to this, the aggression index was based on a single item, which may have undermined the reliability of the assessment in the present experiments. For these reasons Experiment 2 included an aggression questionnaire that was especially designed to measure aggressive tendencies in youths on a continuous scale.

Although the first experiment yielded potentially interesting results, one important limitation of this experiment is that, despite the random allocation of participants to the experimental and the control condition, it cannot be precluded that the trend towards group differences following the conditioning task was due to pre-existing differences between both conditions, rather than to the experimental manipulation. In order to take potential pre-existing group differences into account a pre-post test design would be required. In addition, given the small size of the effects in Experiment 1, the use of a repeated measures design would have the additional advantage of offering more statistical power.

Following this, Experiments 2 and 3 were designed to further explore whether self-esteem can be

enhanced with the conditioning procedure employed in Experiment 1 using a pre-post test design. In addition, to provide more convincing evidence of changes in implicit self-esteem an additional measure of implicit self-esteem was added, the Name Letter Preference Task (Nuttin, 1985). As a subsidiary issue, Experiments 2 and 3 were designed to test whether any effects of the conditioning procedure would be stable over longer time periods. Therefore, both experiments included a one-month follow-up. Experiment 2 further explored the effect of the conditioning procedure on self-esteem and aggression, and included an alternative aggression measure that assessed both reactive and proactive aggression. Experiment 3 investigated the effect of the conditioning procedure on self-esteem and general psychological functioning, and therefore included the Strengths and Difficulties Questionnaire (Goodman, 2001). Finally, given the small size of the effects as obtained in Experiment 1, an additional goal of Experiment 3 was to examine whether repetition of the conditioning procedure would bolster the effects on children's self-esteem.

Experiment 2

Method

Participants

A total of 106 primary school children (47 boys, 59 girls) were randomly assigned to either the experimental or the control condition after obtaining written consent from the children and their parents. Children were aged between 10 and 13 years ($M = 11.2$, $SD = 0.77$). There were no differences with respect to gender, $\chi^2(1, N = 106) < 1$, and age, $t(104) < 1$, between the experimental and the control condition.

Materials

Explicit self-esteem. To reduce experiment burden only the global self-esteem scale of the SPPC was used in the present experiment. The internal consistency of this scale was good with alphas of .85, .88, and .91, at the pretest, posttest and follow-up assessments respectively. Test-retest stability in the control group was high from pretest to posttest ($r = .90$, $p < .01$) and from posttest to follow-up ($r = .80$, $p < .01$).

Implicit self-esteem. To assess implicit self-esteem we used an IAT that was identical to the one employed in Experiment 1. Spearman-Brown corrected split-half reliability varied over the different assessments (r 's being .64, .39, and .56, respectively). Test-retest correlations in the control group were significant from pretest to posttest, $r = .32$, $p < .05$, and from posttest to follow-up, $r = .39$, $p < .05$. Data were treated similarly as in Experiment

1. Data of children who made more than 25% errors and from children that were more than 3 standard deviations removed from the group mean were excluded from the analyses. All in all, the final N for the analysis was 86 (45 in the experimental and 41 in the control condition).

The Name Letter Preference Task (NLPT; Nuttin, 1985) was used as an additional index of implicit self-esteem. The NLPT assesses how well individuals like their own initials relative to the other letters of the alphabet (see Koole & De Hart, 2007; Krizan & Suls, 2008). In the present experiment children were presented with all 26 letters of the Dutch alphabet, which appeared one by one and in a random order on a computer screen. Beneath each letter five square boxes appeared which were labelled 'not at all beautiful', 'somewhat beautiful', 'beautiful', 'very beautiful', and 'extremely beautiful'. For each letter, the children were asked to click on the box that corresponded best with their evaluation of the letter on screen. Thus, the attractiveness of each letter was rated on a five-point scale. Calculation of the Name Letter Preference Task (NLPT) effect was based on previous studies by Koole and colleagues (2001) and Franck, De Raedt, and De Houwer (2007). As a first step, the rating of each individual letter for each participant was corrected for inter-individual differences in rating tendencies by Z-transforming it using the mean and standard deviation of all letter ratings of that participant. Next, a baseline score was calculated for each letter of the alphabet by taking the mean of each letter for all participants that did not have that letter in their first or last name. For the pretest assessment the baseline scores were calculated on the basis of the entire sample, for the posttest and follow-up assessments, the baseline scores were calculated for each group (experimental, control) separately. Following this, separate name letter effects were calculated for the first letter of the first and last name of each participant by subtracting the baseline score from the participants' Z-transformed rating for that letter. Finally, a total name letter preference score was obtained by averaging both NLPT effects. The final N for the data analysis was 104 (55 in the experimental and 49 in the control condition). Test-retest correlations in the control group were significant both from pretest to posttest, $r = .60$, $p < .01$, and from posttest to follow-up, $r = .63$, $p < .01$. However, correlations between the name letter effects for the first and last name were very low (r 's .01, .00, and .15, respectively), indicating poor internal consistency.

Aggression. As a measure of aggression we included a ten-item aggression questionnaire

that was especially designed for measuring aggressive tendencies in youths, the Aggression Questionnaire for Youths (AQY). Children were presented with ten situations and asked to rate on a six-point scale, varying from 0 = 'nothing' to 5 = 'very much', how much of a specific agent (e.g., water, itching powder, chewing gum) they would use against another child if they were in that particular situation. Factor analysis demonstrated that the questionnaire consists of two factors, pertaining to *reactive* and *proactive* aggressive actions against others. Supporting the validity of the AQY, pilot work showed both subscales are significantly related the Child Rating Scale for Aggression (CRA: Meesters, Muris, & Van Rooijen, 2007). Both subscales displayed acceptable to good internal consistency. For the reactive subscale alphas ranged from .87 to .92, while for the proactive subscale the alphas ranged from .65 to .79. Further, in spite of the experimental manipulation, test-retest correlations ranged from .71 (pretest to follow-up) to .86 (posttest to follow-up), for the reactive subscale and from .60 (pretest to follow-up) to .70 (posttest to follow-up) for the proactive subscale, suggesting adequate test-retest stability over time.

Conditioning procedure. The conditioning task was identical to the one used in Experiment 1.

Table 2 Mean scores (standard deviations) on various self-esteem and aggression measures in both conditions obtained at the pretest, posttest, and follow-up assessments in Experiment 2

		Condition	
		Experimental (n = 55)	Control (n = 51)
SPPC	Pre	19.6 (3.1)	20.0 (3.0)
	Post	19.8 (3.2)	20.0 (3.2)
	Fu	20.0 (3.8)	20.1 (3.1)
IAT	Pre	0.39 (0.33)	0.44 (0.40)
	Post	0.58 (0.26)	0.60 (0.34)
	Fu	0.59 (0.31)	0.63 (0.28)
NLPT	Pre	0.62 (0.62)	0.61 (0.74)
	Post	0.82 (0.68)	0.76 (0.74)
	Fu	0.80 (0.70)	0.72 (0.74)
AQY	Pre	11.4 (7.6)	12.1 (8.0)
	Post	12.3 (8.8)	14.0 (8.6)
	Fu	12.6 (9.0)	13.0 (8.0)

SPPC = Self Perception Profile for Children; IAT = Implicit Association Test (positive scores indicate positive self-esteem); NLPT = Name Letter Preference Task (positive scores indicate positive self-esteem); AQY = Aggression Questionnaire for Youths; FU = follow-up. N's vary across variables and assessments due to missing and/or excluded data; reported means are based on the data included in the analyses.

Procedure

Children were tested in small groups with a maximum of four children in a separate room at school. The experimenter was present at all times and the children were seated facing away from each other at different ends of the room to ensure that they would not distract each other during the assessments. In order to control for group differences before the conditioning task, a pre-post test design was used. To reduce the potential influence of test-retest effects participants completed the pretest assessment one day before they completed the conditioning task. The posttest assessment was completed immediately after the conditioning task. After one month the experimenter returned for the follow-up assessment. During all assessments children first received a brief introduction and then consecutively completed the IAT, NLPT, SPPC, and the AQY.

Results

Descriptive statistics for children in both conditions at various assessments are shown in Table 2.

Explicit self-esteem

A 2 (Condition: experimental vs. control) x 2 (Gender: girls vs. boys) x 3 (Assessment: pretest, posttest, follow-up) ANOVA on children's SPPC scores showed that none of the main or interaction effects were significant (all F s < 1.2, $p > .2$). Thus, the SPPC scores remained stable over the three assessments, and were independent of Condition and Gender.

Implicit self-esteem

IAT. Children's IAT scores were subjected to a 2 (Condition) x 2 (Gender) x 3 (Assessment) ANOVA, with the last factor being a repeated measure. Only the main effect of Assessment reached significance, $F(2, 81) = 11.1, p < .01$, partial $\eta^2 = .22$. Post-hoc comparisons showed that, irrespective of Condition or Gender, children showed increasing IAT scores from the pretest ($M = .45, SD = .32$) to the posttest ($M = .62, SD = .27$) assessment, $F(1, 71) = 19.6, p < .01$, partial $\eta^2 = .22$. The IAT scores remained stable from the posttest to the follow-up assessment, $F(1, 71) < 1$.

NLPT. Children's NLPT effects were subjected to a 2 (Condition) x 2 (Gender) x 3 (Assessment) ANOVA, with the last factor being a repeated measure. Only the main effect of Assessment was significant, $F(2, 99) = 3.4, p < .05$, partial $\eta^2 = .06$. Within-subject contrasts indicated that this effect was due to the difference between the pretest ($M = .61, SD = .68$) and the posttest ($M = .79, SD = .71$) assessment, $F(1, 100) = 6.6, p < .05$, partial $\eta^2 = .06$. The difference between the posttest and the follow-up ($M = .76, SD = .721$) assessment was not significant, $F(1, 100) < 1$.

Aggression

The AQY scores were analysed by means of a four-way 2 (Condition: experimental vs. control) x 2 (Gender: girls vs. boys) x 2 (Subscale: reactive vs. proactive) x 3 (Assessment: pretest, posttest, follow-up) ANOVA, with the last two factors being repeated measures. As indicated by a significant main effect of Subscale, participants scored higher on the reactive ($M = 10.6$, $SD = 6.4$) than on the proactive subscale ($M = 1.9$, $SD = 2.5$), $F(2, 100) = 3.2$, $p < .05$, partial $\eta^2 = .06$. The main effect of Assessment was also significant, $F(2, 100) = 3.2$, $p < .05$, partial $\eta^2 = .06$. Within-subject contrasts showed that children reported an increase in aggression from the pretest to the posttest ($M = 11.7$, $SD = 7.8$, and $M = 13.1$, $SD = 8.8$, respectively), $F(1, 101) = 6.4$, $p < .05$, partial $\eta^2 = .06$. The difference between the posttest and follow-up assessment ($M = 12.8$, $SD = 8.4$) was not statistically significant, $F(1, 101) < 1$. In addition, a significant main effect of Gender emerged, $F(1, 101) = 10.4$, $p < .01$, partial $\eta^2 = .09$. This main effect was qualified by a significant Subscale x Gender interaction, $F(1, 101) = 7.5$, $p < .01$, $\eta^2 = .07$, indicating that on the reactive subscale boys ($M = 12.3$, $SD = 6.5$) scored higher than girls ($M = 2.2$, $SD = 2.8$), while no such difference emerged on the proactive subscale. None of the other main or interaction effects reached significance.

Relation between implicit and explicit self-esteem

Unexpectedly, the IAT and the NLPT showed no significant correlation on either the pretest ($r = .03$), posttest ($r = .07$), or follow-up assessments ($r = .15$). The IAT was also not significantly related to the SPPC at pretest ($r = -.14$) or follow-up ($r = .05$), but showed an unexpected significant negative correlation with the SPPC at the posttest assessment ($r = -.24$, $p < .05$). The NLT was neither significantly related to the SPPC at pretest ($r = -.02$) or follow-up ($r = .05$), but showed a weak negative correlation with the SPPC at posttest ($r = -.17$, $p = .09$).

Relation between self-esteem and aggression

There were no significant relations at the pretest, posttest or follow-up assessments between the AQY reactive subscale and the IAT (r 's being .06, .04, and .04, respectively), the NLPT (r 's being -.09, -.05, and .06, respectively), or the SPPC (r 's being -.05, -.02, and -.04, respectively). There were also no significant relations at the pretest, posttest or follow-up assessments between the AQY proactive subscale and the IAT (r 's being .08, .04, and -.06, respectively), and the SPPC (r 's being -.01, -.09, and -.01, respectively). The relation between the NLPT and the AQY proactive subscale was inconsistent: At pretest the relation was significantly negative ($r = -.24$, $p < .05$), at posttest it was not significant

($r = .01$), while at follow-up it was marginally significantly positive ($r = .17$, $p = .09$).

Experiment 3

Method

Participants

A total of 151 primary school children (66 boys, 85 girls) and their parents consented to participate. Children were aged between 9 and 13 years ($M = 11.1$, $SD = 0.77$). There were no differences regarding gender, $\chi^2(1, N = 151) < 1$, and age, $t(149) < 1$, between the experimental and the control condition.

Materials

Explicit self-esteem. Similar to Experiment 2 the global self-esteem subscale of the SPPC was used as an index of explicit self-esteem. The internal consistency of this scale was good with alphas of .78, .84, and .90 at the pretest, posttest and follow-up assessments respectively. Test-retest stability in the control group was high from pretest to posttest ($r = .79$, $p < .01$) and from posttest to follow-up ($r = .82$, $p < .01$).

Implicit self-esteem. To assess implicit self-esteem we employed an IAT and an NLPT for which procedures were identical to Experiment 2. Spearman-Brown corrected split-half reliability of the IAT varied across the pretest, posttest and follow-up assessments (r 's being .68, .48, and .35, respectively). Test-retest correlations in the control group were significant both from pretest to posttest, $r = .26$, $p < .05$, and from posttest to follow-up, $r = .44$, $p < .01$. For various reasons (e.g., technical problems, illness, school obligations) data of one or more IAT assessments were missing for 17 children (eight in the experimental and nine in the control group). In addition, data of children who made more than 25% errors or who were more than 3 standard deviations removed from the group mean were excluded from the analysis. All in all, the final N for the analysis was 106 (53 in each group).

The NLPT effect was calculated in the same way as in Experiment 2. Data on one or more NLPT assessments were missing for seven children (four in the experimental and three in the control group). In addition, data that were more than 3 standard deviations removed from the group mean were excluded (at follow-up one boy in the control and one boy in the experimental group). The final N for the data analysis of this test was 136 (71 in the experimental and 65 in the control condition). Test-retest correlations in the control group were significant both from pretest to posttest, $r = .43$, $p < .01$, and from posttest to follow-up, $r = .40$, $p < .01$. Correlations between the name letter effects for

the first and last name were low but significant for the pretest ($r = .18, p < .05$) and the follow-up ($r = .27, p < .01$), but not significant for the posttest ($r = .13, p > .16$).

Psychological functioning. To assess general psychological functioning we employed the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001). To optimise reliability of the assessments we asked children as well as their parents to fill in this questionnaire, employing the child as well as the parent version of the SDQ. The SDQ is a 25-item self-report measure covering the most important domains of child psychopathology as well as personal strengths. The items describe positive or negative attributes of children and adolescents that have to be scored on a three-point scale (0 = 'not true', 1 = 'somewhat true', 2 = 'certainly true'). The items can be allocated to five subscales of five items each pertaining to emotional symptoms, conduct problems, hyperactivity-inattention, peer problems, and prosocial behaviour. In the present study, however, we only used the total difficulties score, which is obtained by summing the scores on all scales with the exception of the prosocial behavior subscale (range 0-40). The psychometric properties of

Dutch version of the SDQ are satisfactory (Muris, Meesters, & Van den Berg, 2003b). Missing SDQ data were imputed according to the corrected item mean substitution procedure as proposed by Huisman (1999). The parent reports of two children in the control group (one at the pretest assessment and one at the follow-up assessment) were excluded because there were more than two missing answers. The internal consistency of the SDQ total difficulties score in the present sample was good with alphas of .77 and .79 at the pretest assessment and .79 and .78 at the follow-up assessment, for the child and parent version respectively. Test-retest stability in the control group was high, and this appeared true for the self-report ($r = .82, p < .01$) and the parent-report versions of the scale ($r = .73, p < .01$).

Conditioning procedure. The conditioning task was identical to the one used in Experiments 1 and 2.

Procedure

Similar to Experiment 2 all children were tested in small groups with a maximum of four children in a separate room at school. During all assessments children first received a brief introduction and then consecutively completed the IAT, NLPT, and SPPC. Children completed the first SDQ during the pretest assessment. Immediately after completing the pretest assessment participants completed the conditioning procedure for the first time. After one week children completed the conditioning procedure for the second time. After another week children completed the conditioning procedure for the third and final time, immediately followed by the posttest assessment. One month later the experimenter returned for the follow-up assessment, during which children also completed the SDQ for the second time. Parents had received the first SDQ in combination with the informed consent form prior to the start of the experiment and returned it in a closed envelope to the experimenter. They received the second SDQ via their children and were asked to return the completed SDQ when their children received the follow-up assessment.

Results

Descriptive statistics for children in both conditions at various assessments are shown in Table 3.

Explicit self-esteem

A 2 (Condition) x 2 (Gender) x 3 (Assessment) ANOVA on children's SPPC scores showed that none of the main or interaction effects was significant (all $F_s < 2.0, p > .13$). Thus, SPPC scores remained stable over the three assessments, and were independent of Condition and Gender.

Table 3 Mean scores (standard deviations) on various measures of self-esteem and psychological functioning in both conditions obtained at the pretest, posttest, and follow-up assessments in Experiment 3

		Condition	
		Experimental (n = 76)	Control (n = 75)
SPCC	Pre	19.6 (2.6)	19.3 (3.1)
	Post	19.3 (2.9)	19.3 (3.0)
	Fu	19.7 (3.1)	19.5 (3.7)
IAT	Pre	0.38 (0.42)	0.57 (0.37)
	Post	0.55 (0.32)	0.60 (0.36)
	Fu	0.55 (0.35)	0.66 (0.27)
NLPT	Pre	0.84 (0.75)	0.83 (0.69)
	Post	0.78 (0.76)	0.58 (0.76)
	Fu	0.71 (0.79)	0.74 (0.74)
SDQ-C	Pre	7.7 (5.2)	9.0 (5.4)
	Fu	6.8 (4.9)	7.5 (5.0)
SDQ-P	Pre	5.1 (3.7)	5.7 (4.8)
	Fu	4.2 (3.9)	5.1 (4.2)

SPPC = Self Perception Profile for Children; IAT = Implicit Association Test (positive scores indicate positive self-esteem); NLPT = Name Letter Preference Task (positive scores indicate positive self-esteem); SDQ-C/P = Strengths and Difficulties Questionnaire, Child and Parent version, respectively; FU = follow-up. N's vary across variables and assessments due to missing and/or excluded data; reported means are based on the data included in the analyses.

Implicit self-esteem

IAT. Children's IAT scores were subjected to a 2 (Condition: experimental vs. control) x 2 (Gender: girls vs. boys) x 3 (Assessment: pretest, posttest, follow-up) ANOVA, with the last factor being a repeated measure. The analysis showed a significant main effect of Assessment, $F(2, 101) = 3.8, p < .05$, partial $\eta^2 = .07$. Within-subject contrasts showed that the difference between the pretest ($M = .47, SD = .40$) and posttest ($M = .58, SD = .34$) assessment was significant, $F(1, 102) = 5.6, p < .05$, partial $\eta^2 = .04$, whereas the difference between the posttest and the follow-up ($M = .61, SD = .32$) assessment was not, $F(1, 100) < 1$. In addition, a significant main effect of Condition emerged, $F(1, 102) = 4.6, p < .05$, partial $\eta^2 = .04$: children in the control condition generally showed higher IAT scores than children in the experimental condition. Finally, a marginally significant main effect of Gender emerged, $F(1, 102) = 3.7, p = .059$, partial $\eta^2 = .04$, indicating that boys tended to have higher IAT scores than girls. None of the other main or interaction effects reached the conventional level of significance (all $F_s < 2.0, p > .15$).

NLPT. A 2 (Condition) x 2 (Gender) x 3 (Assessment) ANOVA on the NLPT effects revealed that none of the main or interaction effects were significant (all $F_s < 2.3, p > .1$), indicating that the NLPT effect did not change significantly over the three assessments, and was independent of Condition and Gender.

Psychological functioning

To assess changes in general psychological functioning, SDQ total difficulties scores of the children and their parents obtained during the pretest and follow-up assessment were subjected to two separate 2 (Condition: experimental vs. control) x 2 (Gender: girls vs. boys) x 2 (Assessment: pretest vs. follow-up) ANOVAs, with repeated measures on the last factor. Analysis of the child data showed a significant main effect of Assessment, $F(1, 140) = 24.4, p < .01, \eta^2 = .15$, indicating a decline in SDQ total difficulties scores from the pretest to the follow-up assessment. In addition, a significant main effect of Gender emerged, $F(1, 140) = 5.6, p < .05, \eta^2 = .04$: the SDQ total difficulties score of girls was lower than that of boys. Analysis of the parent data only yielded a significant main effect of Assessment, $F(1, 116) = 5.1, p < .05, \eta^2 = .04$, indicating a decline in the SDQ total difficulties scores from the pretest to the follow-up assessment.

Relation between implicit and explicit self-esteem

In line with the previous experiment, the IAT and the NLPT showed no significant correlation

on either the pretest ($r = .11$), posttest ($r = .02$), or follow-up assessments ($r = .12$). The IAT was also not significantly related to the SPPC at pretest ($r = .09$), posttest ($r = -.01$), or follow-up ($r = .01$). In a similar vein, the NLPT was not significantly related to the SPPC at any of the assessments (r 's being $-.03, -.11$, and $-.04$, respectively).

Relation between self-esteem and psychological functioning

Higher scores on the SDQ, reflecting higher levels of difficulties, were associated with lower levels of self-reported self-esteem on the SPPC. This was true for parent as well as self-reported difficulties at the pretest (r 's being $-.29, p < .01$, and $-.44, p < .01$, respectively) and the follow-up assessment (r 's $-.20, p < .01$, and $-.41, p < .01$, respectively). No significant correlations emerged on any of the assessments between either parent or self-reported difficulties and the implicit self-esteem measures, with the exception of a weak relation between self-reported difficulties and the IAT score at pretest ($r = .18, p < .05$) suggesting that higher IAT scores were related to more self-reported difficulties.

Discussion

The main results of Experiments 2 and 3 can be summarised as follows. First, no specific enhancement effect of the experimental conditioning procedure emerged. That is, in Experiments 2 and 3 children in the experimental and control condition showed a similar increase in implicit self-esteem from the pretest to the posttest as indicated by the IAT. In addition, in Experiment 2 but not Experiment 3, a similar pattern of results emerged for implicit self-esteem as indicated by the NLPT. Second, in both experiments explicit self-esteem as measured by the SPPC did not change as a result of the experimental manipulation. Third, in contrast with predictions, self-reported aggression as indicated by the AQY increased from the pretest to the posttest assessment. Finally, in Experiment 2 various measures of self-esteem and aggression showed no meaningful correlations with each other. In Experiment 3, explicit but not implicit self-esteem was significantly related to psychological functioning.

Although implicit self-esteem did show an increase from the pretest to the posttest assessment on both the IAT and the NLPT in Experiment 2 and on the IAT in Experiment 3, this increase was independent of the experimental condition. One possible explanation might be that the additional attention that participants received during the experiments was enough to increase implicit self-esteem for all children. The picture is not entirely consistent though, as in Experiment

3 the NLPT remained stable from the pretest to the posttest assessment. Nevertheless, it seems safe to conclude that any changes in implicit self-esteem were not specifically due to the pairing of self-relevant stimuli with smiling faces. Moreover, completing the conditioning procedure repeatedly did not seem to have any additional enhancement effects as compared with completing the procedure only once. The findings of Experiments 2 and 3 are also informative with respect to the potential correlates of (implicit) self-esteem in children. In Experiment 2 no meaningful relations were found between a self-report measure of aggression and measures of implicit and explicit self-esteem. This finding casts serious doubt on the idea that self-esteem is related to aggression in this age group. In addition, Experiment 3 showed that explicit self-esteem but not implicit self-esteem was related to both child and parent reports of children's psychosocial difficulties. Possible implications of these findings will be discussed in the general discussion.

General discussion

The major purpose of the present experiments was to take a first step in filling the gap in our knowledge concerning implicit self-esteem in children. In a series of three experiments we explored the malleability of self-esteem using the conditioning paradigm of Baccus and colleagues (2004), the relation between measures of implicit and explicit self-esteem, and their relation with

measures of aggression and general psychological functioning in various samples of primary school children. A summary of the major findings of these experiments is presented in Table 4, and will be discussed below.

Effect of conditioning on implicit and explicit self-esteem

Although the results of Experiment 1 tentatively indicated that the conditioning procedure might be able to enhance children's implicit self-esteem, and additionally seemed to have an effect on aggression, these findings could not be replicated in Experiments 2 and 3. Note in passing that in two other unreported experiments, which were identical to Experiment 1 with the exception that in one experiment child faces and in the other smiley's were used instead of adult faces in the condition task, no effects of the conditioning procedure were found either. This strongly suggests that the pairing of self-relevant information with smiling faces has no specific effect on children's implicit or explicit self-esteem, and that the trend towards group differences found in Experiment 1 either reflects a spurious finding or possibly was the result of pre-existing differences between the experimental and the control group. This raises the question why the currently used experimental conditioning procedure was not able to enhance implicit self-esteem in children, while it was successfully employed for this purpose in a sample of adults (Baccus et al., 2004). There are a number

Table 4 Summary of main results of Experiments 1-3

Exp	Δ ISE	Δ ESE	r I-E SE		SE-Aggression / SDQ				
			RSES	SPPC	SPPC	IAT			
1	.005 (n = 131).	.023 [†] (n = 125)							
				IAT	NLPT		SPPC	IAT	NLPT
2	.002 (n = 86) ^b	.012 (n = 104) ^b	Pre	-.14	-.01	Pre	-.04	.08	-.15
			Post	-.24*	.17 [†]	Post	-.05	.05	-.03
			FU	.05	.05	FU	-.04	.02	-.11
3	.009 (n = 106) ^b	.009 (n = 140) ^{a, b}	Pre	.09	-.03	Pre _{ch}	-.44**	.18*	.07
			Post	-.01	-.11	Pre _{pa}	-.29*	-.16 [†]	-.03
			FU	.01	-.04	FU _{ch}	-.41**	.12	.06
						FU _{pa}	-.20*	-.16	.05

Δ = effect sizes (partial η^2) for posttest differences (Exp. 1)/changes in implicit self-esteem (ISE) or explicit self-esteem (ESE)(Exp. 2, 3); r I-E SE = correlations between implicit and explicit self-esteem measures; r SE-Aggression/SDQ = correlations between implicit and explicit self-esteem measures and the Aggression measure (Hot Sauce test in Exp. 1, and the total score of the Aggression Questionnaire for Youths in Exp. 2) or the Strength and Difficulties Questionnaire (Exp. 3); RSES = Rosenberg Self-Esteem Scale; SPPC = Self-Perception Profile for Children; IAT = Implicit Association Test; NLPT = Name-Letter Preference Task; _{ch} = child report; FU = follow-up; _{pa} = parent report; [†] $p \leq .1$; * $p < .05$; ** $p < .01$; ^a In unexpected direction; ^b Based on Time x Group contrast for pretest to posttest.

of possible explanations for these differential results. First, the lack of effects may be the result of the adaptations we made to the procedure. As mentioned earlier, in the Baccus et al. study self-relevant stimuli were always followed by smiling faces, while other-relevant stimuli were always followed by negative or neutral faces. It is unclear whether the reported effects by Baccus et al. were due to a strengthening of *positive* associations with the self, a strengthening of *negative* associations with others, or a combination of both. To make sure that any effects would be caused by a strengthening of *positive* associations with the self we adjusted the procedure so that other-relevant stimuli were equally often followed by positive, negative or neutral faces. However, as a result of this adaptation the contrast between self and other-relevant stimuli is less sharp which may have reduced the effects of the procedure. If true, the results suggest that the effects found by Baccus et al. were mainly caused by a strengthening of negative associations with other, as the data seem to indicate that this procedure is not effective in strengthening *positive* associations with the self (i.e., increase self-esteem).

Another explanation is that any effects of the experimental conditioning procedure were overshadowed by a more general positive effect of an aspecific factor such as increased attention during the experiment. It may well be that such a factor has quite some influence on children, whereas it may have little impact on adults. In line with such an explanation, the results of Experiments 2 and 3 showed that implicit self-esteem was enhanced for all children, independent of the type of conditioning procedure they completed (i.e., experimental or control). Importantly, the pattern of IAT results suggests that this enhancement of implicit self-esteem cannot simply be attributed to, for instance, test-retest effects. That is, with repeated practice participants learn to overcome the crucial interference during the various phases of the IAT. As a result, retest effects on the IAT generally lead to smaller effects. In the present experiments, however, the IAT effects became larger over time. This result was consistent over Experiments 2 and 3, suggesting that it did not reflect a spurious finding. If the effect of the experimental procedure was indeed overshadowed by other factors, conditioning, at least in children, does not seem to be a very efficient way of increasing implicit self-esteem. Related to this, the implicit self-esteem of children in this age group seemed to be fairly positive so that it may be difficult to achieve strong enhancement effects due to a ceiling effect. Adolescents and adults, in contrast, may have been more exposed to (negative) experiences which

results in greater variation of implicit self-esteem. Such an explanation would be in line with the idea that middle childhood is a relatively stable period just before the turbulent stage of adolescence, during which self-esteem typically decreases (e.g., Robins et al., 2002). If this line of reasoning is correct, then it would be interesting to explore at what age the implicit self-esteem of children/adolescents starts to change. In addition, it might be interesting to see whether the implicit self-esteem of a preselected sample of 'at risk' children or children with current psychopathology that are likely to display relatively low levels of implicit self-esteem can be increased using the evaluative conditioning procedure.

While implicit self-esteem seemed to be affected similarly by the experimental and control conditioning procedures in Experiments 2 and 3, there was no effect of the conditioning procedure on explicit self-esteem in any of the experiments, which is in line with previous findings in adults (Baccus et al., 2004). One explanation for the differential effects on implicit and explicit self-esteem might be that measures of implicit self-esteem are more sensitive to temporal changes in self-evaluative associations than a self-report measure like the SPPC. That is, the SPPC subscale used in all experiments asks children how they generally evaluate themselves, rather than how they view themselves at that very moment. For implicit measures, on the other hand, it is known that they are at least partly context dependent (see for instance Blair, 2002 for a review). Following this, the implicit measures may have been more influenced by any additional positive reinforcement and attention that the children received while participating in the experiment than the SPPC.

For exploratory reasons the factor gender was included in all experiments. No gender differences were found with respect to implicit self-esteem in any of the experiments. Thus, although gender role and stereotypes develop early in childhood such differences apparently do not (yet) differentially influence implicit self-esteem in primary school children. Although previous studies indicate that there appears to be a small but consistent gender difference in explicit self-esteem, with males showing higher self-esteem than females (e.g., Kling, et al., 1999; Veerman et al., 1997), such a pattern did not emerge consistently in the present experiments. Meanwhile, mean scores of boys were higher than those of girls.

Relation between measures of implicit and explicit self-esteem

No consistent meaningful relations emerged between the implicit and explicit self-esteem measures. In the adult self-esteem literature meta-analyses found weak but positive mean population estimates for the relation between self-report measures and the IAT (e.g., Hoffman et al., 2005) and the NLPT (Krizan & Suls, 2008). One factor that may have suppressed the correlations in the present experiments is that the IAT always preceded the self-reports (cf. Hoffman et al., 2005; Krizan & Suls, 2008). It seems a consistent finding, however, that the relation between implicit and explicit measures of self-esteem is not strong, neither in children nor in adults. It is not clear what to make of this finding. Some authors interpret this finding as support for the idea that both types of measures reflect different underlying constructs (e.g., Baccus et al., 2004; Franck et al., 2007). Other authors, however, argue that implicit and explicit self-esteem measures tap the same underlying construct and contend that the observed low correlations are due to a lack of reliability of implicit self-esteem measures (e.g., Dijksterhuis et al., 2007). Although the present series of experiments were not designed to address this fundamental issue, it is clear that the reliability of the currently used measures of implicit self-esteem deserves some discussion. For the IAT split-half reliabilities were on average $r = .63$ at the first assessment but lower at subsequent assessments at one week and one month follow-up (around $r = .44$ for the second and third assessment over two experiments). Although these numbers are somewhat lower than what has been reported for adult samples they are still a lot higher than those reported for other latency-based measures in adult samples (e.g., Nosek, Greenwald, & Banaji, 2007). The same is true for the test-retest reliabilities (Bosson, Swann, & Pennebaker, 2000; Nosek et al., 2007). One explanation for the lower reliabilities in these child populations may be that children find the task more difficult than adults, for instance due to a shorter attention span. However, over the first three experiments approximately 4% of the children made more than 25% errors, suggesting that the task was not too difficult. All in all, compared with other latency based measures in adults this version of the IAT performed pretty well. The same cannot be said about the NLPT for which correlations between effects based on the initials of the first and last name ranged between .00 and .27, with a mean correlation of .12. This extremely poor internal consistency limits the maximally possible correlation with other measures to such an extent that significant correlations can hardly be expected. In contrast, the NLPT seems to have a

modest degree of internal consistency in adults (see Bosson et al., 2000). This suggests that the NLPT is not an appropriate test for children in this age range, possibly because children have had much less exposure to their name letters than adults.

Relation between self-esteem and aggression / psychological functioning

The current findings seem to suggest that we can exclude aggression and general psychological functioning from the list of potentially relevant correlates of implicit self-esteem in children. However, similar to what has been mentioned above, the observed low correlations with the NLPT are certainly due to the very poor reliability of this measure, and also correlations with the IAT may have been suppressed due to limited reliability. In addition, the present experiments included unselected samples that predominantly consisted of healthy functioning children. In line with this, implicit self-esteem was generally rather positive, while (self-reported) aggression and difficulties were fairly low. Therefore, it remains possible that significant relations between implicit self-esteem and aggression and other psychological difficulties can be found for instance in samples of children with conduct or psychological disorders. In addition, it also remains possible that implicit self-esteem plays a more prominent role in psychological functioning in children at an older age.

Explicit self-esteem on the other hand was clearly related to general psychological functioning, such that lower levels of self-reported self-esteem were associated with higher levels of difficulties as reported by the children themselves as well as their parents. This finding is in line with other studies that have observed a relation between low explicit self-esteem and a range of negative consequences (e.g., Bos et al., 2006; Harter, 1993; Muris et al., 2003a; Muris et al., 2005). The relation between explicit self-esteem and the aggression measures was low but consistently negative. The direction of this relation is in line with adult studies suggesting that lower levels of self-esteem are associated with higher levels of aggression (Donnelan et al., 2005).

Issues for future research

So what can we learn from these studies? With respect to the question whether pairing of self-relevant information with smiling faces can lead to increases in self-esteem, the present experiments suggest that this is not the case. Given that the effect sizes were very small at best, the lack of effects does not seem to reflect a simple power problem. Furthermore, even though the reliability

of the implicit measures was certainly not high, the reliability of the IAT was much better than has been reported for other implicit measures in adult samples, and hence should be high enough to detect meaningful group differences. Thus, the conditioning procedure did not seem to work as expected. Meanwhile, the possibility cannot be ruled out that this result was due to the use of this specific experimental procedure. Perhaps alternative procedures, such as the subliminal conditioning procedure that was successfully used by Dijksterhuis (2004) to enhance implicit self-esteem in students, may be more successful. Although we cannot think of any *a priori* reason why another evaluative conditioning procedure would be more effective, this remains a potential lead for further research.

With respect to children's implicit self-esteem it is clear that a lot of work remains to be done. As a first step to explore children's implicit self-esteem it seemed logical to employ measures that have been successfully employed in adults, and this seemed particularly true for the IAT as this procedure has been successfully employed in earlier studies of children (e.g., Baron & Banaji, 2006; Field & Lawson, 2003). From this first exploration of implicit self-esteem in children it has become clear, however, that a major challenge for researchers will be to improve the measures in terms of reliability and validity. We hope that the

present findings will be a useful starting point for finding ways to improve measures of implicit self-esteem in children.

Another area where a lot of exciting questions await future research concerns the origins and development of implicit self-esteem. Although the current findings tentatively suggest that implicit self-esteem is generally positive in middle childhood, there are data that suggest that the origins of adult implicit self-esteem lie in youth. DeHart, Pelham, & Tennen (2006) found that college students' as well as their mother's retrospective reports of the parenting style, were related to current levels of implicit self-esteem. A challenge for future research would be to further explore this issue adopting a more developmental approach, for instance by longitudinal studies in which the development of children's implicit and explicit self-esteem is monitored and the relation with symptoms of current and later psychopathology can be explored.

Taken together, this first exploration of implicit self-esteem in children reveals a lot of questions and challenges for researchers in this field. Nevertheless we feel safe to conclude that, apparently, most children between the ages of 10 and 13, do not need an additional smile to make them feel worthwhile.

References

- Baccus, J. R., Baldwin, M. W., & Packer, D. J. (2004). Increasing implicit self-esteem through classical conditioning. *Psychological Science*, *15*, 498-502.
- Baron, A. S., & Banaji, M. A. (2006). The development of implicit attitudes: evidence of race evaluations from ages 6 to 10 and adulthood. *Psychological Science*, *17*, 53-58.
- Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review*, *103*, 5-33.
- Beck, A. T., Brown, G. K., Steer, R. A., Kuyken, W., & Grisham, J. (2001). Psychometric properties of the Beck Self-Esteem Scales. *Behavior Research and Therapy*, *39*, 115-124.
- Blair, I. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review*, *6*, 242-261.
- Bos, A. E. R., Muris, P., Mulkens, S., & Schaalma, H. P. (2006). Changing self-esteem in children and adolescents: A roadmap for future interventions. *Netherlands Journal of Psychology*, *62*, 26-33.
- Bosson, J. K., Swann, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind man and the elephant revisited. *Journal of Personality and Social Psychology*, *79*, 631-643.
- Butler, R. J., & Gasson, S. L. (2005). Self-esteem/self-concept scales for children and adolescents: A review. *Child and Adolescent Mental Health*, *10*, 190-201.
- Conner, T., & Barret, L. F. (2005). Implicit self-attitudes predict spontaneous affect in daily life. *Emotion*, *5*, 476-488.
- de Jong, P. J. (2002). Implicit self-esteem and social anxiety: Differential self-favouring effects in high and low anxious individuals. *Behaviour Research and Therapy*, *40*, 501-508.
- DeHart, T., Pelham, B. W., & Tennen, H. (2006). What lies beneath: Parenting style and implicit self-esteem. *Journal of Experimental Social Psychology*, *42*, 1-17.
- Dijksterhuis, A. (2004). I like myself but I don't know why: Enhancing implicit self-esteem by evaluative conditioning. *Journal of Personality and Social Psychology*, *86*, 345-355.
- Dijksterhuis, A. (2006). The emergence of implicit self-esteem. *Netherlands Journal of Psychology*, *62*, 19-25.
- Dijksterhuis, A., Albers, L. W., & Bongers, K. C. A. (2007). Digging for the real attitude: Lessons from research on implicit and explicit self-esteem. In R. E. Petty, R. H. Fazio & P. Brinol (Eds.), *Attitudes: Insights From the New Wave of Implicit Measures*. Erlbaum.
- Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., Moffitt, T. E., & Caspi, A. (2005). Low self-esteem is related to aggression, antisocial behaviour, and delinquency. *Psychological Science*, *16*, 328-335.

- Field, A. P., & Lawson, J. (2003). Fear information and the development of fears during childhood: Effects on implicit fear responses and behavioural avoidance. *Behaviour Research and Therapy*, 41, 1277-1293.
- Franck, E., De Raedt, R., & De Houwer, J. (2007). Implicit but not explicit self-esteem predicts future depressive symptomatology. *Behaviour Research and Therapy*, 45, 2448-2455.
- Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the Academy of Child and Adolescent Psychiatry*, 40, 1337-1345.
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit Social Cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102, 4-27.
- Greenwald, A. G., McGhee, D. E., & Schwarz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, 74, 1464-1480.
- Greenwald, A. G., & Farnham, S. D. (2000). Using the Implicit Association Test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology*, 79, 1022-1038.
- Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, 85, 197-216.
- Haney, P., & Durlak, J. A. (1998). Changing self-esteem in children and adolescents: A meta-analytic review. *Journal of Clinical Child Psychology*, 27, 423-433.
- Harter, S. (1985). *Manual for the Self-Perception Profile for Children*. Denver: University of Denver.
- Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. F. Baumeister (Ed.), *Self-Esteem: The puzzle of low self-regard* (pp. 87-116). New York: Plenum.
- Harter, S. (1999). *The Construction of the Self: A Developmental Perspective*. The Guilford Press: New York.
- Hoffman, W., Gawronski, B., Geschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin*, 31, 1369-1385.
- Huisman, M. (1999). *Item Nonresponse: Occurrence, Causes, and Imputation of Missing Answers to Test Items*. (M&T series 32). Leiden: DSWO Press.
- Kling, K. C., Hyde, J. S., Showers, C. J., & Buswell, B. N. (1999). Gender differences in self-esteem: A meta-analysis. *Psychological Bulletin*, 125, 470-500.
- Koole, S. L., & DeHart, T. (2007). Self-affection without self-reflection: Origins, models, and consequences of implicit self-esteem. In C. Sedikides & S. Spencer (Eds.), *The Self in Social Psychology* (pp. 36-86). New York: Psychology Press.
- Koole, S., Dijksterhuis, A., & Van Knippenberg, A. (2001). What's in a name: Implicit self-esteem and the automatic self. *Journal of Personality and Social Psychology*, 80, 669-685.
- Krizan, Z., & Suls, J. (2008). Are implicit and explicit measures of self-esteem related: A meta-analysis for the Name-Letter Test. *Personality and Individual Differences*, 44, 521-531.
- Lieberman, J. D., Solomon, S., Greenberg, J., & McGregor, H. A. (1999). A hot new way to measure aggression: hot sauce allocation. *Aggressive Behavior*, 25, 331-348.
- Mann, M., Hosman, C. M. H., Schaalma, H. P., & De Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research*, 19, 357-372.
- Meesters, C., Muris, P., Van Rooijen, B. (2007). Relations of neuroticism and attentional control with symptoms of anxiety and aggression in non-clinical children. *Journal of Psychopathological Behavior Assessment*, 29, 149-158.
- Muris, P., Meesters, C., Van de Blom, W., & Mayer, B. (2005). Biological, psychological, and cultural correlates of body change strategies and eating problems in adolescent boys and girls. *Eating Behaviours*, 6, 11-22.
- Muris, P., Meesters, C., & Fijen, P. (2003a). The Self Perception Profile for Children: Further evidence for its factor structure, reliability and validity. *Personality and Individual Differences*, 35, 1791-1802.
- Muris, P., Meesters, C., & Van den Berg, F. (2003b). The Strengths and Difficulties Questionnaire (SDQ): Further evidence for its reliability and validity in a community sample of Dutch children and adolescents. *European Child and Adolescent Psychiatry*, 12, 1-8.
- Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2007). The Implicit Association Test at age 7: A methodological and conceptual review. In: J. A. Bargh (Ed.), *Automatic Processes in Social Thinking and Behavior*. New York: Psychology Press.
- Nuttin, J. M. (1985). Narcissism beyond Gestalt and awareness: The name letter effect. *European Journal of Social Psychology*, 15, 353-361.
- Robins, R. W., Trzesniewski, K. H., Tracy, J. L., Gosling, S. D., & Potter, J. (2002). Global self-esteem across the lifespan. *Psychology and Aging*, 17, 423-434.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Schneider, W., Eschman, A., & Zuccolotto, A. (2002). *E-prime User's Guide*. Pittsburg: Psychology Software Tools Inc.
- Spalding, L. R., & Hardin, L. R. (1999). Unconscious unease and self-handicapping: Behavioral consequences of individual differences in implicit and explicit self-esteem. *Psychological Science*, 10, 535-539.
- Steinberg, L., & Sheffield Morris, A. (2001). Adolescent development. *Annual Review of Psychology*, 52, 83-110.
- Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin*, 128, 825-848.
- Tanner, R., Stopa, L., & De Houwer, J. (2006). Implicit views of the self in social anxiety. *Behaviour Research and Therapy*, 44, 1379-1409.
- Veerman, J. W., Straathof, M., Treffers, P., Van den Bergh, B., & Ten Brink, L. (1997). *Competentie belevingsschaal voor kinderen*. Lisse: Swets Test Services.

How do children experience their parents' feeding practices?

A study using the Dutch Child Feeding Questionnaire- child version

Aim: The Child Feeding Questionnaire (CFQ) is a self-report instrument that assesses the amount of parental control over child feeding. It is usually completed by parents but social desirability, feelings of shame, and inadequate introspection or self-perception may cloud parents' self-reports. Children's experiences of parental control could be quite different from their parents' reports. In the current study it was considered how school-age children (8-12 years) perceive parental feeding control. In particular, the role of overweight and the correspondence between perceptions of children and their parents were examined.

Methods: A child version of the CFQ was constructed and the relationship between weight status and the experienced parental control was investigated. It was hypothesised that overweight children and children of overweight parents experience more control over child feeding than do normal-weight children and children of normal-weight parents. Moreover, the correspondence between parents' reports and children's experiences of parental control was examined.

Results: Weight status of neither the child, nor the parent played an important role in perceived child feeding control; no differences were found with respect to attitudes and practices. Regarding parent-child differences, children's perceptions differed from their parents' reports of control with respect to two out of six subscales. Weight status of the child did not influence the agreement between parent and child scores.

Conclusions: As parents and children correspond well on the Child Feeding Questionnaire, the child version of this questionnaire should be further examined in order to determine its validity.

Where: Netherlands Journal of Psychology, Volume 66, 26-32

Received 20 March 2009; accepted 25 November 2009

Keywords: Parental control; Child Feeding Questionnaire; Overweight

Authors: Esther Jansen, Sandra Mulken, Ellen Sanders and Anita Jansen

Department of Clinical Psychological Science, Faculty of Psychology and Neuroscience, Maastricht University, Maastricht.

Correspondence to: Esther Jansen, Department of Clinical Psychological Science, Faculty of Psychology and Neuroscience, Maastricht University, PO Box 616 6200 MD Maastricht, the Netherlands, e-mail: elgmjansen@live.com

Obesity is considered one of the most serious threats to public health. In the United States, one in three adults is obese (body mass index (BMI) > 30 kg/m²) (Ogden, Carroll, Curtin, McDowell, Tabak, & Flegal, 2006). Among children, the prevalence of overweight is increasing as well. In the United States, about 17% of all children and adolescents are overweight, whereas an additional 16.5% are at risk of becoming overweight (Ogden et al., 2006). As childhood overweight and obesity often track into adulthood (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997; Clarke & Lauer, 1993; Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993), it is of great significance to challenge this health risk at a young age. Parents are believed to have a substantial influence when it comes to the development of their children's weight status (Birch & Fischer, 1995). Besides acting as role models, being responsible for purchases and providing meals, parents may also influence their children's food preferences and intake by using control techniques. Parental control in the domain of eating can be subdivided into pressuring the child to eat healthy kinds of food and restricting the intake of unhealthy, palatable kinds of food (Birch, Fisher, Mackey, Grimm-Thomas, Sawyer, & Johnson, 2001). Nevertheless, overcontrolling children's intake might have adverse effects on food preferences and consumption. It has been hypothesised that parents who overcontrol their children's food intake may interfere with their children's ability to self-regulate intake. As a result, children would become more responsive to external cues (e.g. the smell and presence of food) as opposed to internal cues (e.g. hunger and satiety) (Faith, Scanlon, Birch, Francis, & Sherry, 2004; Jansen, Theunissen, Slechten, Nederkoorn, Mulken, & Roefs, 2003). This could lead to disturbed eating behaviours such as eating in the absence of hunger, restrained eating and eventually excessive weight gain (Birch & Fisher, 2000; Birch, Fisher, & Krahnstoever Davison, 2003; Robinson, Kiernan, Matheson, & Hailed, 2001). According to the 'obesity proneness' model (Constanzo & Woody, 1985), parents are likely to exert more control when they experience weight issues themselves or when they think their children are at risk for developing eating problems or overweight. So far, causal evidence for adverse effects of parental control is scarce. However, completely in line with the obesity proneness model, earlier research has found parental control in child feeding, as measured by the Child Feeding Questionnaire (CFQ; Birch et al., 2001), to be correlated with children's weight status: a higher level of reported control was associated with a higher BMI (Birch et al., 2003). The CFQ is an instrument for assessing parental control in child feeding and is administered to parents only. The

CFQ is a valid and widely used measure of parental beliefs and practices regarding child feeding (Kaur, et al., 2006; Keller, Pietrobelli, Johnson, & Faith, 2006). Although CFQ scores and weight status indeed seem to be correlated, it can be questioned whether these CFQ data are reliable. After all, CFQ scores are self-reported. It is unknown whether parents have sufficient insight into their own behaviours to provide dependable answers. In addition, factors such as social desirability and feelings of shame and guilt may be involved when inquiring about child feeding. Further, the *perception* of parental control by the child itself might be extremely relevant for eating behaviour. Apart from children's responses being less sensitive to social desirability (Gonzales, Cauce, & Mason, 1996; Paulson, 1994) and feelings of shame and guilt (Tagney, Wagne, Gavlas, & Gramzow, 1991), the perception of *experienced* control might be a more important determinant of eating behaviour than the actual control or parents' perceptions of their control. After all, children are expected to act upon how they experience control, not upon parent's reports of control or the control that is objectively exerted. For the purpose of the current study, a child version of the CFQ was constructed. The first aim of the study was to test the relationship between children's experiences of parental control and weight status. In line with the obesity proneness model (Constanzo & Woody, 1985), it was hypothesised that overweight children would experience more parental control over child feeding than normal-weight children would. In addition, children of overweight parents were expected to experience more parental control than children of normal-weight parents. A second aim of the current study was to examine to what extent congruence existed between children's perceptions about parental control over child feeding and their parents' reports. Good agreement between children's experiences and parents' reports was expected. However, it was hypothesised that overweight children and their parents agreed less on parental control than normal-weight participants. This was expected to be the result of the fact that parents of overweight children use ineffective parenting practices such as inconsistent discipline (Decaluwé, Braet, Moens, & Van Vlierberghe, 2006; Johnson, Brownell, St. Jeor, Brunner, & Worby, 1997). For example, higher adaptability (e.g. constantly changing rules) is associated with an early onset of obesity and disturbed eating behaviour. With respect to child feeding, parents might restrict intake at one occasion, but may be permissive at another occasion. As a result, children do not know where they stand, possibly resulting in a discrepancy between parent and child with respect to CFQ scores.

Method

Participants

Ninety-four school-age children (45 boys) participated in this study. The age of the participating children ranged from eight to twelve years (mean age = 9.60, $SD = 1.30$). Forty-eight children had a normal weight (mean BMI percentile score of 48.49), 46 children were overweight (BMI percentile score > 90; $M = 97.40$). See also Table 1 for participant characteristics. The overweight participants were recruited from a waiting list for multidisciplinary weight loss treatment in an ambulant setting. The normal-weight participants were recruited from two primary schools in the same community. Their BMI percentile scores had to be between .15 and .85. Response rates for both groups was 100%. The parent who spent the most time with the child (in 87.8% of the cases this was the mother, in 12.2% it was the father) was approached and invited to fill out a questionnaire about her/his child's feeding behaviour. Their children were requested to fill out the child version of the questionnaire. Permission for participation was obtained from the children's parents. The study was approved by both the Atrium Medical Centre in Heerlen, and the ethics committee of the Faculty of Psychology and Neuroscience, Maastricht University, the Netherlands.

Table 1 Participant characteristics: normal-weight versus overweight children

	Normal-weight children (n=48)	Overweight children (n=46)
Age (mean (SD))	9.02 (.96)	10.20 (1.34)
Gender (boys/girls)	22/26	23/23
Parents with normal weight	68.8%	21.7%
Overweight parents	31.3%	76.1%

Measurements

Child Feeding Questionnaire

Parents filled out the CFQ (Birch, et al., 2001). The original version of the CFQ was translated into Dutch with permission of the authors. The CFQ is a measure of parental attitudes, beliefs and practices of child feeding and obesity proneness. It is based on the above-mentioned obesity proneness model (Constanzo & Woody, 1985). The CFQ comprises 31 items on seven subscales. These seven subscales can be classified into two categories. The category 'risk factors and concerns' includes the subscales 'perceived feeding responsibility', 'perceived parent overweight' (how parent classifies own weight), 'perceived child overweight' (how parent classifies child's weight) and 'concerns about child overweight'. The category 'control in child feeding: attitudes and practices' comprises the subscales 'restriction',

'pressure to eat' and 'monitoring' (keeping track of child's eating behaviour). Every item is scored on a scale from '1' to '5'. Subsequently, subscale scores are calculated by averaging the corresponding item scores. The higher the score, the more parental control is exerted.

The internal consistency of the seven subscales is good; all subscales have a Cronbach's alpha above .70. The CFQ has been proven valid in non-Hispanic Whites and Hispanic samples (Birch et al., 2001).

Child Feeding Questionnaire: child version

For the current study, the original CFQ was converted into a child version. All items were rephrased in such a way that the questions were asked from the child's perspective. For example the original item: 'I intentionally keep some foods out of my child's reach' was rephrased into 'My parents try to keep some foods out of my reach'. The subscale 'perceived parent overweight' was excluded from the child version of the CFQ, since children do not have insight into their parents' weight history. Considerable effort was put into preventing affection of the tenor of the original questions. See also Appendix A for the modified version of the CFQ. Although the original CFQ is also useful for parents of very young children (from the age of two onwards), the child version is suitable for children with sufficient reading skills. The reliability of the CFQ child version is good, Cronbach's alphas for the six subscales being .72, .74, .85, .69, .66 and .88 respectively in our sample.

Body mass index

Weight and height of the overweight children and their parents were measured (after completing the CFQ) by a research worker. Weight (kg) was measured by means of a digital scale. Height (cm) was assessed with a measuring tape which was applied to the wall. The research worker had undergone a short training in collecting this kind of information correctly.

Weight and height data of the normal-weight children and their parents were provided by the parents. BMIs and BMI percentiles were calculated subsequently (Children's BMI-percentile-for-age Calculator, USDA/ARS Children's Nutrition Research Center).

Procedure

Parents and children received an original (parent version) or a child version of the CFQ, respectively. The overweight children and their parents received their questionnaires during the interview on admission to the weight loss treatment. They were instructed to individually fill out the questionnaire in situ. The normal-weight participants and their parents received their questionnaires at

school, and were instructed to complete the questionnaires at home, without consultation of the other participating family member. It was stressed that participants should base their answers on their own experiences.

Data analyses

A one-way analysis of variance (ANOVA) on BMI percentile was performed to confirm that the two groups (overweight children versus normal-weight children) actually differed with respect to BMI percentile. In addition, one-way ANOVAs on age and gender distribution were performed to preclude group differences at the start of the study. To test whether the weight status of the children influenced their experiences of parental control (Hypothesis 1), and whether weight status of the parent influenced their children's experiences of parental control (Hypothesis 2), a multivariate analysis of variance (MANOVA) (child CFQ subscale scores as dependent variables, both child's weight status and parental weight status as factors) was carried out. Both factors were entered into one analysis to examine possible interaction effects of child weight status and parental BMI on CFQ scores. Finally, to test agreement between the children and their parents (Hypothesis 3), a repeated measure design with parent CFQ scores at Time 1, child CFQ scores at Time 2, and weight status of the child as between-subjects factor was carried out for every subscale of the CFQ.

Results

One-way ANOVA showed that the overweight children had significantly higher BMI percentiles than the normal-weight children ($F = 128.39, p < .001$). In addition, the group of overweight children did not differ from the group of normal-weight children regarding gender distribution ($F = .16, p = .69$), but the groups differed with respect to age ($F = 24.01, P < .001$), the overweight children being slightly older than the normal-weight children (10.20 versus 9.02 years).

Hypotheses 1 and 2

Overweight children perceive more parental control over child feeding than normal-weight children do and children from overweight parents perceive more parental control over child feeding

than children from normal-weight parents do. In general, overweight children had higher child CFQ total scores than normal-weight children. In addition, results of the MANOVA showed that overweight children scored significantly higher than normal-weight children with respect to 'perceived child overweight' [$F(1, 90) = 38.47, p < .001$], and 'concerns about child overweight' [$F(1, 90) = 40.88, p < .001$]. There were no significant differences on the other four subscales. Parental weight status did not influence perceived parental control scores. With respect to interaction effects, no child weight status \times parental weight status effects were found on child CFQ scores. For the significant results, see also Table 2.

Hypothesis 3

In general, parents and children agree well on (perceived) parental control over feeding, but there is more agreement between normal-weight children and their parents than between overweight children and their parents.

As hypothesised, the agreement between children and their parents was good. No differences were found between the parent CFQ total score and child CFQ total score [$F(1,90) = 2.45, p = .12$]. In addition no interaction effects were found between questionnaire version and weight status of the child; that is, overweight children did not differ from normal-weight children in the agreement with their parents scores [$F(1,90) = .047, p = .83$]. With respect to the subscales, significant differences between parent and child scores were found on the subscales 'perceived feeding responsibility' and 'pressure to eat'. Regarding 'perceived feeding responsibility', parents score significantly higher than their children do [$F(1, 92) = 6.17, p < .05$]. Regarding 'pressure to eat', parents score significantly lower than their children do [$F(1, 92) = 24.89, p < .001$]. No significant differences were found on the other four subscales. As for any differences in agreement between normal-weight children and overweight children, a significant questionnaire \times weight status interaction was found with respect to 'concerns about child overweight'. Overweight children scored significantly lower than their parents, whereas normal-weight children scored significantly higher than their parents. See also Table 3.

Table 2 Mean (SD) child CFQ total score and subscale scores: normal-weight children versus overweight children

	Normal-weight children (n=48)	Overweight children (n=43)	F value	P value
Perceived child overweight	2.94 (.32)	3.45 (.33)	38.47	<.001**
Concerns about child overweight	2.16 (1.20)	3.87 (.89)	40.88	<.001**
CFQ total score	19.65 (2.40)	21.66 (2.64)	9.16	<.01*

Data presented as mean (SD); * $p < .05$; ** $p < .001$.

Table 3 Differences between child CFQ scores and parent CFQ scores

	Main effect: differences between parent CFQ scores and child CFQ scores		Interaction effect: questionnaire version x child weight status	
	F value	P value	F value	P value
Total CFQ score	2.44	NS	.05	NS
Feeding responsibility	6.17	<.05*	.008	NS
Perceived child overweight	.11	NS	2.33	NS
Concerns about child overweight	.87	NS	9.84	<.01*
Restriction	.008	NS	.92	NS
Pressure to eat	24.89	<.001**	.84	NS
Monitoring	.11	NS	.01	NS

Data presented as mean (SD); * $p < .05$; ** $p < .001$. NS = not significant.

Discussion

The aim of the current study was to investigate how children perceive their parents' control over feeding, and whether child and parent weight status influences perceived control in children. Moreover, the agreement between perceptions of children and their parents was examined. In addition, a possible interaction with weight status of the child was tested. For this purpose, a child version of the CFQ was constructed and administered to 48 normal-weight children, 46 overweight children and their parents. In general, overweight children scored higher on the CFQ than normal-weight children. However, these differences were, for the greater part, found in the subscales 'perceived child overweight' and 'concerns about child overweight'. It seems just plain logic that parents of overweight children are more concerned about their children's weight statuses as opposed to parents of normal-weight children. In fact, when looking at the subscales in the category 'control in child feeding: attitudes and practices', no differences at all were found between the perceptions of overweight and normal-weight children. Therefore, from this study, it cannot be concluded that overweight children experience more control over feeding than normal-weight children. In addition, parental weight status did not influence children's perceptions of parental control. However, in order to draw firmer conclusions about the causal relationship between parental control and overweight, experimental research is badly needed. Future research might focus on manipulating the level of control in normal-weight children, to examine its effects on eating behaviour and weight status. A second aim of the study was to examine the possible differences between parents' reports and children's experiences concerning parental control. In general, children's perceptions correspond well

with their parents' reports. Therefore, it might be useful to administer the child version of the CFQ in the future. However, with respect to the subscales 'perceived feeding responsibility' and 'pressure to eat', significant differences were found between child CFQ and parent CFQ scores. Children score lower than their parents do with respect to feeding responsibility, and they score higher than their parents with respect to pressure to eat (they experience more pressure than their parents claim to exert).

Weight status of the child did not influence agreement between child and parent scores as expected. Overweight children were expected to differ more from their parents than normal-weight children. However, no such differences were found. The only interaction effect of child weight status x questionnaire version was found with respect to 'concerns over child overweight'. Overweight children scored lower than their parents, whereas normal-weight children scored higher than their parents. The fact that overweight children score lower than their parents could possibly be explained by social desirability of the parent; when your child is overweight, you must be very concerned.

The question which version of the questionnaire correlates best with actual control behaviour is interesting. More research is necessary to determine whether the original CFQ or the child CFQ is more valid and reliable. Nevertheless, the question remains whether it is really necessary to know objectively to what extent parental control is exerted. It seems more relevant to examine how experienced control and disturbed eating behaviours are related.

A limitation of this study concerns the use of the CFQ. Although the CFQ is a valid and widely used

questionnaire, it has not yet been validated in an overweight sample. Further research should focus on validating the CFQ in a variety of large samples. Although further research is necessary to validate the CFQ Child version, the reliability of this

questionnaire in the current sample is high, which is a promising starting point.

References

- Birch, L. L., & Fisher, J. A. (1995). Appetite and eating behavior in children. *Pediatric Clinics of North America*, 42, 931-953.
- Birch, L. L., & Fisher, J. O. (2000). Mother's child-feeding practices influence daughters' eating and weight. *American Journal of Clinical Nutrition*, 71, 1054-1061.
- Birch, L. L., Fisher, J. O., Mackey, C. N., Grimm-Thomas, K., Sawyer, R., & Johnson, S. L. (2001). Confirmatory factor analysis of The Child Feeding Questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite*, 36, 201-210.
- Birch, L. L., Fisher, J. O., & Krahnstoever Davison, K. (2003). Learning to overeat: Maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. *The American Journal of Clinical Nutrition*, 78, 215-220.
- Clarke, W. R., & Lauer, R. M. (1993). Does childhood obesity track into adulthood? *Critical Reviews in Food Science and Nutrition*, 33, 423-430.
- Constanzo, P. R., & Woody, E. Z. (1985). Domain-specific parenting styles and their impact on the child's development of particular deviance: The example of obesity proneness. *Journal of Social and Clinical Psychology*, 3, 425-445.
- Decaluwé, V., Braet, C., Moens, E., & Van Vlierberghe, R. (2006). The association of parental characteristics and psychological problems in obese youngsters. *International Journal of Obesity*, 30, 1766-1774.
- Faith, M. S., Scanlon, K. S., Birch, L. L., Francis, L. A., & Sherry, B. (2004). Parent-child feeding strategies and their relationships to child eating and weight status. *Obesity Research*, 12, 1264-1272.
- Gonzales, N., Cauce, A. M., & Mason, C. (1996). Interobserver agreement in the assessment of parental behavior and parent-adolescent conflict; African American mothers, daughters, and independent observers. *Child Development*, 67, 1483-1498.
- Jansen, A., Theunissen, N., Slechten, K., Nederkoorn, C., Mulkens, S., & Roefs, A. (2003). Overweight Children overeat after exposure to food cues. *Eating Behaviors*, 4, 197-209.
- Johnson, B., Brownell, K. D., St. Jeor, S. T., Brunner, R. L., & Worby, M. (1997). Adult obesity and functioning in the family of origin. *International Journal of Eating Disorders*, 22, 213-218.
- Kaur, H., Li, C., Nazir, N., Choi, W. S., Resnicow, K., Birch, L. L., & Ahluwalia, J. S. (2006). Confirmatory factor analysis of the Child-Feeding Questionnaire among parents of adolescents. *Appetite*, 47, 36-45.
- Keller, K. L., Pietrobelli, A., Johnson, S. L., & Faith, M.S. (2006). Maternal restriction of children's eating and encouragements to eat as the 'non-shared environment': A pilot study using the child feeding questionnaire. *International Journal of Obesity*, 30, 1670-1675.
- Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association*, 295, 1549-1555.
- Paulson, S. E. (1994). Relations of parenting style and parental involvement with Ninth-grade students achievement. *The Journal of Early Adolescence*, 14, 250-267.
- Robinson, T. N., Kiernan, M., Matheson, D. M., & Hailed, K. F. (2001). Is parental control over children's eating associated with childhood obesity? Results from a population-based sample of third graders. *Obesity Research*, 9, 306-312.
- Serdula, M. K., Ivery, D., Coates, R. J., Freedman, D. S., Williamson, D. F., & Byers, T. (1993). Do obese children become obese adults? A review of the literature. *Preventive Medicine*, 22, 167-177.
- Tagney, J. P., Wagner, P. E., Gavlas, J., & Gramzow, R. (1991). *The Test of Self Conscious Affect for Adolescents (TOSCA-A)*. Fairfax, VA: George Mason University. USDA / ARS Children's Nutrition Research Center. (n.d.). Children's BMI-percentile-for-age Calculator. Retrieved February 12, 2009, from <http://www.kidsnutrition.org/bodycomp/bmizz.html>
- Whitaker, R. C., Wright, J. A., Pepe, M. S., Seidel, K. D., & Dietz, W. H. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *The New England Journal of Medicine*, 337, 869-873.

Appendix A

Instruction Please circle one number for each question which best corresponds to your answer.

	Never	Seldom	Half of time	Most of time	Always
1. When you are at home, how often do your parents feed you?	1	2	3	4	5
2. How often do your parents decide how much you eat?	1	2	3	4	5
3. How often do your parents decide whether you have eaten the right kind of food?	1	2	3	4	5

Instruction Please indicate how your weight was at each of these 6 periods. Circle only one number for each period.

	Serious underweight	Underweight	Average	Overweight	Serious overweight
4. Your first year of life	1	2	3	4	5
5. As a toddler	1	2	3	4	5
6. As a pre-schooler	1	2	3	4	5
7. From kindergarten through to 2nd grade	1	2	3	4	5
8. From 3rd to 5th grade	1	2	3	4	5
9. From 6th to 8th grade	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Unconcerned	A little bit unconcerned	Neutral	A little bit concerned	Concerned
10. How concerned are your parents that you eat too much when they are not around?	1	2	3	4	5
11. How concerned are your parents that you have to diet to keep a healthy weight?	1	2	3	4	5
12. How concerned are your parents that you will be overweight?	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Disagree	Disagree a little bit	Neutral	Agree a little bit	Agree
13. My parents want to be sure that I do not eat too many sweets (candy, ice cream, cake or pastries).	1	2	3	4	5
14. My parents want to be sure that I do not eat too many high fat foods.	1	2	3	4	5
15. My parents want to be sure that I do not eat too much of my favourite foods.	1	2	3	4	5
16. My parents try to keep some foods out of my reach.	1	2	3	4	5
17. My parents offer me sweets (candy, ice cream, cake, pastries) as a reward for good behaviour.	1	2	3	4	5
18. My parents offer me my favourite foods for good behaviour.	1	2	3	4	5
19. If my parents did not guide my eating, I would eat too many junk foods.	1	2	3	4	5
20. If my parents did not guide my eating, I would eat too much of my favourite foods.	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Disagree	Disagree a little bit	Neutral	Agree a little bit	Agree
21. I should always eat all of the food on my plate.	1	2	3	4	5
22. My parents have to be careful to make sure I eat enough	1	2	3	4	5
23. If I say 'I'm not hungry', my parents try to make me eat anyway.	1	2	3	4	5
24. If my parents did not guide my eating, I would eat much less than I should.	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Never	Seldom	Sometimes	Most of time	Always
25. How much do your parents keep track of the sweets (candy, ice cream, cake, pastries) that you eat?	1	2	3	4	5
26. How much do your parents keep track of the snack food (potato chips, Doritos, cheese puffs) that you eat?	1	2	3	4	5
27. How much do your parents keep track of the high fat foods that you eat?	1	2	3	4	5

The loss of happy life years associated with mental disorders in the Netherlands

How detrimental are mental disorders? One way to answer that question is to consider the effects on happiness. We analysed a representative sample ($N = 7076$) of the Dutch population, who were asked how often they had felt happy during the past four weeks. Mental disorders were assessed using the Composite International Diagnostic Interview. It turns out that the lowest levels of happiness are almost the exclusive domain of people with (a history of) mental disorders. The total loss of happy life years due to mental disorders is 36.6 million for the Netherlands. Where: *Netherlands Journal of Psychology*, Volume 66, 33-34

Received 9 April 2009; accepted 11 November 2009

Keywords: Anxiety disorders; Happiness; Happy life years; Mental disorders; Mood disorders, Substance abuse disorder

Authors: Ad Bergsma*, Ruut Veenhoven*, Margreet ten Have** and Ron de Graaf**

There are many social problems and the means to meet these are scarce. This calls for priority setting, which requires urgency criteria. In the perspective of utilitarian moral philosophy (Bentham, 1907) priority should be given to the solution of problems that depress happiness most. In that context we explored how much happiness is lost in association with mental disorders in the Netherlands.

Method

We studied who is unhappy in a representative sample ($N = 7076$) of the Dutch population, in the NEMESIS study (Bijl, Van Zessen, Ravelli, De Rijk, & Langendoen, 1998). The respondents were interviewed using the Composite International Diagnostic Interview (Wittchen et al., 1991) to assess mental disorders. Happiness was measured using a single question on how often respondents had felt happy during the past four weeks. Response options were: never felt happy (1), rarely felt happy (2), sometimes felt happy (3), often felt happy (4), usually felt happy (5), and always felt happy (6). This measure has been shown to be valid for people with mental disorders (Bergsma et al., 2010).

Results

It turned out that 57.7% of the people who never or rarely felt happy during the past four

weeks suffered from a mental disorder and an additional 26.9% had a history of a mental disorder. We mention lifetime prevalence because psychopathology is associated with the residual functional disability when a disorder is cured or in remission (Bijl & Ravelli, 2000).

We have calculated for the first time the loss of 'happy life years' that is caused by different mental disorders. In this measure life expectancy in years is multiplied by average happiness on a scale of 0 – 1 (Veenhoven, 1996). The average happy life expectancy for people who do not have a history of mental disorder is 63.2 years in the Netherlands. The one-month prevalence of different mental disorders and the associated levels of happiness was used in the calculations of the loss of happy life years for different mental disorders. It was taken into account that unhappiness is associated with a loss of longevity (Lyubomirsky, King, & Diener, 2005; Veenhoven, 2008). The median group that had felt happy sometimes or often was given an average life expectancy. The most happy group (usually or always happy) got an additional 2.5 months of life and the most unhappy group (never or rarely happy) lost five life years. This is roughly what the available research tells us. We did not add an extra loss of life years for the people with addictions, although unhealthy drinking and drugs use can compromise life expectancy.

It is not possible to add up the total loss of happy life years for the different disorders, to get the

* Faculty of Social Sciences, Erasmus University, Rotterdam

** Netherlands Institute of Mental Health and Addiction, Utrecht

Correspondence to: A. Bergsma, Faculty of Social Sciences, Erasmus University Rotterdam, PO Box 1738, 3000 DR Rotterdam, the Netherlands
E-mail: bergsma@fsw.eur.nl

Table 1 The burden of mental disorders in loss of happy life years for the population of the Netherlands

Diagnosis	Loss in happy life years for one person ¹	% of the population affected	Total loss of happy life years for the Netherlands
Any mental disorder during the past month	14.2	15.7	36.6 10 ⁶
Any mood disorder during the past month	31.8	4.0	21.1 10 ⁶
Any anxiety disorder during the past month	14.6	9.8	23.6 10 ⁶
Any substance abuse disorder during the past month	10.1	4.8	7.9 10 ⁶

¹ This is a fictive person who will suffer from a mental disorder during his or her whole life. In reality the disorders come and go and the burden is spread among more people.

total sum, because 4.6% of our respondents had more than one mental disorder. It is especially the existence a co-morbid mood disorder that enhances the loss of happy life years of the anxiety and substance abuse disorders.

Conclusion

Not everybody with a mental disorder is unhappy (Bergsma et al., in press), but it is apparent that the loss of happiness associated with mental disorders

is enormous. The 36.6 million loss of happy life years is a conservative estimate, because we did not take the residual functional disability into account that is characteristic for people who have a history of mental disorder, but do not meet the criteria for a disorder at the time of measurement. Mental disorders should therefore be regarded as a social problem that deserves priority in public policy. Investment in mental health care is likely to add substantially to greater happiness of a greater number.

References

- Bentham, J. (1907–1789). *Introduction to the Principles of Morals and Legislation*. Oxford: Clarendon Press.
- Bergsma, A., Ten Have, M., Veenhoven, R., & De Graaf, R. (in press) Most people with mental disorders are happy; A 3-year follow-up in the Dutch general population. *The Journal of Positive Psychology* (in press).
- Bergsma, A., Veenhoven, R., Ten Have, M. & De Graaf, R. (2010). Do they know how happy they are? On the value of self-rated happiness. *Journal of Happiness Studies*, online first 31 October 2010.
- Bijl, R. V., Van Zessen, G., Ravelli, A., De Rijk, C., & Langendoen, Y. (1998). The Netherlands Mental Health Survey and Incidence Study (NEMESIS): objectives and design. *Social Psychiatry Psychiatric Epidemiology*, 33, 581-586.
- Bijl, R. V., & Ravelli A. (2000). Current and Residual functional disability associated with psychopathology: findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Psychological Medicine*, 30, 657-668.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131, 803-855.
- Veenhoven, R. (1996). Happy life-expectancy. *Social Indicators Research*, 39, 1-58.
- Veenhoven, R. (2008). Healthy happiness: Effects of happiness on physical health and the consequences for preventive health care. *Journal of Happiness Studies*, 9, 449-464.
- Wittchen H-U., Robins L. N., Cottler L. B., Sartorius N., et al. (1991). Cross-cultural feasibility, reliability and sources of variance in the Composite International Diagnostic Interview (CIDI). *British Journal of Psychiatry*, 159, 645-653.

Notes for contributors

The Netherlands Journal of Psychology publishes exclusively in English, UK spelling. Manuscripts must be original and not currently under review or published elsewhere. Articles, Notes and other contributions should not exceed the word limit mentioned elsewhere on the cover without consulting the editor.

If an anonymous review is preferred, the manuscript should include two title pages, one with identifying information and one with the title only. All personal information should be excluded from the body of the text as well. Only manuscripts prepared in this fashion will be subject to blind reviews. Manuscripts are not returned to authors.

The associate editors will assist authors in preparing the manuscript conform the Journal's editorial policy. Because of the broad range of subject matter covered by the journal, authors are encouraged to supply the names of one or more potential referees. Doing so in no way guarantees that the editors will request reviews from these individuals, although such referees may be called upon in addition to those of the editors' choosing.

Netherlands Journal of Psychology follows the publication style of the American Psychological Association. All manuscripts require an abstract of 100-150 words typed on a separate page and 5-10 key words should be provided. Cited references should be presented in the text by author and date and be collated into a reference list at the end of the article with the following information: author(s), year of publication, title and publishing data. Authors are encouraged to consult the *Publication Manual of the American Psychological Association* (5th Edition, see downloadable Style Sheet for quick overview). Authors are requested to restrain from 'overcitation'. Often two or three references will suffice.

Manuscripts not properly prepared will not be considered.

Authors should supply a brief note of about 50 words with their main fields of interest, and including their mailing address, an electronic-mail address, and phone and fax numbers. Authors are responsible for obtaining permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations previously published elsewhere. Authors are sent a pdf of the published version.

Copyrights are conform the publisher's guideline (see cover).

Authors must submit manuscripts in electronic formats to:

Rene.vanhezewijk@ou.nl

Address of the editor

Editor of the Netherlands Journal of Psychology
Prof. R. van Hezewijk
Faculty of Psychology OUNL
PO Box 2960
6401 DL Heerlen
The Netherlands