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Beyond hearing : social-emotional outcomes following cochlear implantation in young children

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Assessing empathy in young children: Construction and validation of an Empathy Questionnaire (EmQue)

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Abstract

Empathy is a basic human capacity that supposedly serves to regulate relationships, supporting collaboration and group cohesion. The capacity to automatically imitate and level with affective expressions in others is supposed to be innate, but already during infancy children need to learn how to regulate their own affective arousal and direct their attention towards the affective state of the first person. In this study, the EmQue, a newly developed parent questionnaire regarding empathy-related behaviors in young children was examined. Responses of 109 parents confirmed the hypothetically assumed levels of empathy in infants and toddlers (mean age = 30 months): (a) Contagion, (b) Attention to Others' Feelings and (c) Prosocial Actions. Associations with other parent questionnaires (e.g., emotion recognition, understanding and regulation) and child behaviors (Empathy, Frustration, Theory of Mind) further confirmed the EmQue's validity. The EmQue could be of clinical relevance during early childhood, particularly for specific clinical groups that are expected to be at risk in this respect, such as children with an Autism Spectrum Disorder or deaf children.

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Introduction

Empathy is a basic human capacity that is important in daily social life. It refers to the ability to respond affectively to emotions in others, aiming at reacting adaptively to another's needs, e.g. to console, support or spare the other person (Decety & Jackson, 2004; Hoffman, 1987). In fact, it is supposed to be the important motor behind many prosocial behaviors or behavior that strengthens group cohesion and cooperation (Jolliffe & Farrington, 2006; Zahn-Waxler et al., 1992). Deficits in empathy can play a critical role in the development of externalizing behavior and other behavioral problems (Jolliffe & Farrington, 2006; LeSure-Lester, 2000; Miller & Eisenberg, 1988). Empathic behaviors can be observed from infancy onwards (Hoffman, 1987). However, besides the obviously important observational studies, no questionnaires are yet developed to systematically operationalize empathy in young children. In this study we constructed and validated a parent questionnaire to examine empathy in infancy and toddler hood.

Levels of Empathy

Hoffman (1987) distinguished four levels of empathy. Although these levels are assumed to develop sequentially, they are not mutually exclusive (Hoffman, 1990). De Waal (2008) supposed that the different levels of empathy represent a Russian doll model, suggesting that each following level builds onto the former levels.

The first level that Hoffman identified is 'Global Empathy', which others labeled 'Emotion Contagion' (Hatfield, Cacioppo, & Rapson, 1993), and which manifests itself in the first year of life. At this level, infants attend to others' emotions, albeit inadaptively because witnessing someone in distress may result in a similar affective response. For example, the crying of one infant may trigger equal responses in other babies. It is assumed that people are 'hardwired' to automatically imitate and synchronize affective expressions (Decety & Jackson, 2004), but infants this young cannot yet differentiate between self and other, which causes them to act as though what happened to the other person happened to them (Vreeke & van der Mark, 2003). Alternatively, infants this young might still have difficulties to control their level of arousal. If true, the ability for self-regulation should be associated negatively with symptoms of emotion contagion.



The second level, which we will label 'Attention to Others' Feelings' is assumed to start at about one year of age. At this level, Hoffman argued, infants become aware that although they feel distressed, it is not oneself but someone else who is in actual danger or pain. In other words, infants become more aware of other people's emotions, which can be observed because they direct their attention to affective displays of others. Moreover, infants develop the capacity to attend to others' emotions with less personal distress. The own response to the distress of another child may now be transformed into concern for the victim.

At the third level, which we will label 'Prosocial Actions', Hoffman argued that children become more responsive to others' emotional displays, and start to react prosocially. A longitudinal study by Zahn-Waxler and colleagues (1992) showed that children develop this capacity to intervene on behalf of others during the second year of life, which can take a variety of forms, including helping, sharing, and comforting.

The fourth level in Hoffman's theory, 'Empathy for Another's Life Condition' develops during late childhood and refers to empathic responses not only confined to the situation but also with another's general level of distress or deprivation. This empathic level may motivate to feel empathy for people who live in more unfavorable circumstances, and support them by, for example, donating money to charity funds.

Current Study

Although these different levels of empathy that Hoffman initially described are widely acknowledged theoretically, to date it is unclear if they indeed exist and can be distinguished empirically. Additionally, it is unclear if these levels are uniquely related to other constructs. The current study examines the psychometric properties of a newly developed questionnaire for parents aimed at observing the first three levels of empathy in infants' and young children's behaviors: the Empathy Questionnaire (EmQue). Because the fourth level develops in late childhood, this level is not incorporated in the questionnaire. The following issues were examined: (1) the assumed three-factor structure of the EmQue, (2) the internal consistency of the three subsequent EmQue scales (Emotion Contagion, Attention to Others Feelings and Prosocial Actions), and (3) the criterion and concurrent validity of these three EmQue scales through their associations with related measures.

The criterion validity of the EmQue scale Attention to Others' Feelings was assessed through examination of its associations with the scale Attention of the Empathy Task. Similarly, the associations of the scale Prosocial Behavior with the scale Consolation of the Empathy Task and with Prosocial Behavior of the SDQ parent questionnaire were examined. The concurrent validity of the three EmQue scales was assessed through examining their associations with another parent questionnaire that taps into social and emotion regulation skills of children between one and five years old; and with additional observations obtained through offering children tasks, including an emotion regulation task and a Theory of Mind task.

The EmQue scale Emotion Contagion was expected to correlate positively with measures that indicate poor emotion regulation. The EmQue scale Attention to Others Feelings was expected to correlate positively with other measures indicating attention to other people's emotions or emotion recognition. The EmQue scale Prosocial Actions was expected to correlate positively with other measures indicating prosocial behavior, but also emotion understanding and attention to others' emotions. Additionally, a positive correlation was expected for this scale with a measure for understanding the subjective nature of other people's mental states, a so-called Theory of Mind task.

In order to examine the frequently assumed sequential nature of the first three levels that were identified in empathy, correlations of the EmQue scales with age were calculated. If contagion indeed precedes children's ability to attend to others' affective states, which in turn precedes children's ability for empathically-driven prosocial behavior, correlations with age should increase over these three levels. In other words, regarding the three levels of empathy, contagion should correlate least strongly with age; whereas prosocial behavior should correlate most strongly.

Method

Participants and Procedure

In this study, parents of 109 one- to five-year-old children (mean age = 30 months, $SD = 13$ months; 57 girls, 52 boys) filled out questionnaires (EmQue, Strengths and Difficulties Questionnaire (SDQ), Emotion Expression Questionnaire (EEQ)).



Parents (87 mothers, 11 fathers, 11 unknown) completed the questionnaires at home through the internet or a paper-and-pencil version.

Children and their parents were recruited via day-care centers, schools and acquaintances of the researchers. The Empathy Task and the Frustration Task were conducted with 31 children from the younger half of the sample (age 12–30 months old; 15 boys, 16 girls), whereas the Theory of Mind task was conducted with 42 children from the older half of the sample (age 31–60 months old; 26 boys, 16 girls).

Compared with national data from Statistics Netherlands (CBS) our sample corresponded in many ways with the Dutch population of parents from one- to five-year-old children (mean age mothers = 34 years; mean age fathers = 37 years). However, the current sample had relatively more parents of Dutch origin (94%), and with higher educational level (80% of the mothers and 73% of the fathers had a BA degree or higher). Most children (94%) lived with 2 parents (of which most children lived with a father and a mother, and 2 children lived with 2 mothers), 25% of the children had no siblings, and almost all children attended some kind of day-care or school for at least one day a week (95%).

Materials

The EmQue consists of 20 items (Table 1), representing three facets of empathy that should be observable in young children: (a) Emotion Contagion, (b) Attention to Others' Feelings, and (c) Prosocial Actions. Parents can rate the degree to which each item, reflecting a type of behavior, applied to their child over the past two months on a 3-point scale (0 = never, 1 = sometimes, 2 = often).

An initial version of the EmQue consisted of 60 items (formulated by a team of developmental psychologists, school teachers and a child psychiatrist who is working with children with an Autism Spectrum Disorder; and based on and inspired by the many observational studies that are available, e.g., by Eisenberg and colleagues), and was tested in a pilot study. A total of 83 parents (mean age of children = 35 months, $SD = 13$ months; 37 boys, 46 girls) completed the questionnaire for this pilot. However, 33 items were removed due to an insufficient fit with the selection criteria (i.e., 30 items were deleted because the particular item had a missing value rate higher than 75%; 3 items were deleted because they differentiated between boys and girls) and 7 items were deleted due to an insufficient fit on their intended factor. Additionally, 4 items were

reformulated in order to represent the three levels of empathy. This resulted in the current 20-item version.

The SDQ is a brief behavioral screening questionnaire (Goodman, 1997), consisting of 25 items. The scale Prosocial Actions (5 items) is used for this study. Parents can rate each item on a 3-point scale (0 = not true, 1 = somewhat true, 2 = certainly true). The internal consistency of the scale Prosocial Actions is usually good (Van Widenfelt, Goedhart, Treffers, & Goodman, 2003). This was confirmed in the present study (Table 2).

The EEQ is a 35-item parent-report questionnaire, designed for this study, and measures emotion expression of the child. Three scales are used for the validation of the EmQue: (a) Emotion Regulation (8 items), which indicates the extent to which children can calm themselves or be calmed by their parents when angry or sad; (b) Others' Emotion Recognition (6 items) which indicates the extent to which the child can recognize the parents' and others' emotions; and (c) Emotion Understanding (6 items), which indicates the extent to which children can evaluate an emotional episode. Parents can rate to what degree each item is true on a 5-point response scale (1 = (almost) never, 2 = rarely, 3 = sometimes, 4 = often, 5 = (almost) always). The internal consistencies of the scales are good (Table 2).

Tasks with Children

The Empathy Task examines children's responses to emotional displays by the experimenter, based on a task displaying pain designed by Zahn-Waxler et al. (1992). The task consists of three separate acting-out performances by the experimenter (happiness with a pen, anger with a pen that fails to write, and pain/sadness while burning one's fingers on a cup of tea). Following each acting-out performance, the experimenter scores the child's behavioral reactions on a checklist that was designed for this study. The checklist consists of two scales: (a) Attention to Others' Emotions (6 items) and (b) Consolation Behavior (5 items, not including the happy event). The internal consistencies of the scales are good (Table 2).



Chapter 2

Table 1 Items of the Empathy Questionnaire for Infants and Toddlers, EmQue

<i>Emotion Contagion</i>	
1	When another child cries, my child gets upset too
4	My child also needs to be comforted when another child is in pain
7	When another child makes a bad fall, shortly after my child pretends to fall too
10	When another child is upset, my child needs to be comforted too
13	When another child gets frightened, my child freezes or starts to cry
16	When other children argue, my child gets upset
19	When another child cries, my child looks away
 <i>Attention to Others' Feelings</i>	
3	When my child sees other children laughing, he/she starts laughing too
6	When an adult gets angry with another child, my child watches attentively
9	My child looks up when another child laughs
12	When adults laugh, my child tries to get near them
15	My child looks up when another child cries
18	When another child is angry, my child stops his own play to watch
20	When other children quarrel, my child wants to see what is going on
 <i>Prosocial Actions</i>	
2	When I make clear that I want some peace and quiet, my child tries not to bother me
5	When another child starts to cry, my child tries to comfort him/her
8	When another child gets upset, my child tries to cheer him/her up
11	When I make clear that I want to do something by myself (e.g. read), my child leaves me alone for a while
14	When two children are quarrelling, my child tries to stop them
17	When another child gets frightened, my child tries to help him/her

The Frustration Task was designed for this study and examines children's responses to a frustrating event. The experimenter opens a bottle in front of the child, closes it again and then asks the child to open the bottle. The child is unaware of the fact that the bottle contains a safety lock that makes it impossible for children to open. The experimenter waits a minimum of 30 s, a maximum of 60 s and then opens the bottle a little bit so the child can now finish the task successfully. During this waiting period, the experimenter scores the child's behavioral reactions on a checklist, consisting of three scales. The scale Diversion (5 items) that is used for this study denotes the extent to which children can divert their attention from the negative stimulus. An example item is 'the child starts doing something else'. One item is formulated contradictory ('the child keeps trying') and recoded. The internal consistency of the scale is good (Table 2).

The Theory of Mind task consisted of the Uncommon Desire Task (Rieffe, Terwogt, Koops, Stegge, & Oomen, 2001), in which children are presented twice with a drawing of a more and a less desirable food item (broccoli and cake in one vignette; tomato and ice-cream in another vignette) and asked which item they prefer. Following this response, a drawing is shown of a child behind a table, with the same 2 items lying in front of him. Children are told that the protagonist's preference is opposite to theirs; and asked what item the protagonist will take from the table. Two control questions ("Does the boy like item 1?" and "Does the boy like item 2?") are also asked per vignette. The total of 6 questions form a scale (minimum score = 0, maximum score = 6) indicating children's ability to understand the subjective nature of mental states, showing good psychometric properties (Table 2).

Table 2 Internal Consistencies of the EmQue, SDQ, EEQ, and Tasks for Children (Frustration Task, Empathy Task, Theory of Mind Task)

	Number of items	Number of participants	Mean (SD)	Cronbach's Alpha	Inter-item correlation
<i>Parent questionnaires</i>					
EmQue (0–2)					
Emotion Contagion	6	109	.42 (.31)	.58	.19
Attention to Others' Feelings	7	109	1.34 (.36)	.71	.26
Prosocial Actions	6	109	.67 (.44)	.80	.41
SDQ, Prosocial Behavior (0–2)	5	109	1.17 (.55)	.82	.48
EEQ, Emotion Regulation (1–5)	8	107	2.73 (.49)	.72	.26
EEQ, Others' Emotion Recognition (1–5)	6	107	3.73 (.64)	.77	.38
EEQ, Emotion Understanding (1–5)	5	107	3.49 (1.22)	.96	.82
<i>Tasks for children (0–1)</i>					
Empathy Task (12–30 months)					
Attention	6	31	.55 (.32)	.82	.43
Consolation	5	31	.10 (.19)	.68	.37
Frustration Task, Diversion (12–30 months)	5	31	.20 (.27)	.71	.39
Desire Task (31–60 months)	6	40	.76 (.29)	.77	.36

Analyses

The internal structure and homogeneity of the EmQue scales was established with Principal Component Analysis (PCA) and reliability analyses. Oblimin rotation with Kaiser normalization was used, as the restriction of scale independence was considered too stringent. The factor count was limited to the assumed 3 factors. The criterion validity was examined by means of correlations of the EmQue scales with the scales of the Empathy Task (only children aged 12–30 months old) and the parent scale Prosocial Behavior of the SDQ. For the SDQ scale, also a regression analysis was performed. The concurrent validity was similarly investigated by means of correlations (and additional regression analyses with the parent questionnaire) of the EmQue scales on the Frustration Task (only children aged 12–30 months old), the Theory of Mind task (only for children aged 31–60 months old), and the scales of the EEQ (Emotion Regulation, Recognition of Others' Emotions, Emotion Understanding).

Table 3 EmQue Items (20 items) and PCA Factor Loadings

	Emotion Contagion	Attention to Others' Feelings	Prosocial Actions
Ep1	.37		
Ep4	.74		
Ep7	.45		
Ep10	.79		
Ep13	.52		
Ep16	.35		
Ep19	–		
Ep3		.45	
Ep6		.62	
Ep9		.67	
Ep12		.41	
Ep15		.70	
Ep18		.56	
Ep20		.42	
Ep2			.73
Ep5			.63
Ep8			.63
Ep11			.76
Ep14			.60
Ep17			.72

Note. Only factor loadings >.35 are displayed.

Results

Factor Structure and Internal Consistencies

A PCA on all 20 items in the EmQue, with the factor count limited to the assumed 3 factors (Table 3), shows that all items loaded $> .35$ on their keyed factor (explaining 40% of the variance), with the exception of item 19 (scale Emotion Contagion). This item was removed from the scale in further analyses. The interfactor correlations between the 3 scales were significant for Emotion Contagion \times Attention to Others' Feelings ($r = .29; p < .01$); Emotion Contagion \times Prosocial Actions ($r = .24; p < .01$); and Prosocial Actions \times Attention to Others' Feelings ($r = .40; p < .01$), as should be the case for a multifaceted construct.

Coefficients for the internal consistency regarding the EmQue scales are presented in Table 2. The Cronbach's Alphas of two EmQue scales (Attention to Others' Feelings and Prosocial Actions) meet the expected minimum of .70, respectively. The scale Emotion Contagion shows lower, but still acceptable, psychometric properties.

Criterion and Concurrent Validity

The Pearson correlation coefficients and the regression coefficients (Table 4) show that some scales have substantial and significant relations to one or more scales of the EmQue. The correlations with the EmQue scale Emotion Contagion are positive for Prosocial Behavior (SDQ), Others' Emotion Recognition (EEQ) and Emotion Understanding (EEQ). However, the correlation with the scale Consolation (Empathy Task) is negative. Regarding the two measures for emotion regulation, Contagion correlates negatively with Emotion Regulation (EEQ) and Diversion (Frustration Task). The regression analyses of the EmQue scales on the prediction of the parent questionnaires, confirms this negative association, and shows a unique contribution of Emotion Contagion to the prediction of Emotion Regulation.

The EmQue scale Attention to Others' Feelings is positively correlated with Prosocial Behavior (SDQ), Others' Emotion Recognition (EEQ), Emotion Understanding (EEQ), Attention (Empathy Task), and the Uncommon Desire Task (but not when corrected for Age). The regression analyses of the EmQue scales on the prediction of the parent questionnaires show that this scale only contributes uniquely to the prediction of Others' Emotion Recognition(EEQ).



The correlations with EmQue scale Prosocial Actions are positive for Prosocial Behavior (SDQ), Others’ Emotion Recognition (EEQ), Emotion Understanding (EEQ), Attention (Empathy Task), Consolation (Empathy Task) and the Uncommon Desire Task. When corrected for Age, the correlation with Attention is no longer significant. The regression analyses show that the scale Prosocial Actions only has a unique contribution to the prediction of Emotion Understanding.

Table 4 Correlation Coefficients (Partial Correlations Corrected for Age) of the EmQue Scales with Parent Questionnaires and with Tasks for Children; and Regression Coefficients of the EmQue Scales with Parent Questionnaires and Age

	Empathy Questionnaire			
	Emotion Contagion	Attention to Others’ Feelings	Prosocial Actions	
	<i>Correlations</i>			
SDQ, Prosocial Behavior	.23**	.40**	.67**	
Emotion Regulation	-.16*	.02	-.01	
Others’ Emotion Recognition	.19*	.48**	.43**	
Emotion Understanding	.18*	.29**	.62**	
Frustration Task, Diversion	-.37* (-.38*)	-.19 (-.11)	-.25 (-.12)	
Empathy Task, Attention	-.01 (-.03)	.35* (.33*)	.32** (.25)	
Empathy Task, Consolation	-.39* (-.42*)	.25 (.12)	.41* (.31*)	
Desire Task	.20 (.24)	.32* (.27)	.34* (.30*)	
	<i>Standardized regression coefficients</i>			
	Age			
SDQ, Prosocial Behavior	.01	.05	.15	.60**
Emotion Regulation	-.23	-.20*	.07	.13
Others’ Emotion Recognition	.27**	.04	.37**	.13
Emotion Understanding	.74**	.13	.02	.77**

Note. Interactions with Age in the regression analyses were not significant and are not shown in this table
* $p < .05$; ** $p < .01$

Relation with Age

Pearson correlations were calculated in order to verify whether the three EmQue scales were related to Age. The age of the participating children varied from 12 to 60 months. Significant correlations were found for Age x Prosocial Actions ($r = .54$; $p < .01$) and Age x Attention to Others’ Feelings ($r = .17$; $p < .05$), but not for Age x Emotion Contagion ($r = .04$; $p > .05$). Additionally, Age had a unique contribution to the prediction of Others’ Emotion Recognition and Emotion Understanding.

Discussion

The outcomes of this study suggest that core features of empathy can be identified in early childhood through parent reports. The three levels of empathy that were identified based on the literature indeed appeared as separate, albeit related, facets of empathy when examining the questionnaire's factor structure, but also when examining the criterion and concurrent validity of the separate levels with other related measures. The expected correlations of the separate scales with other related measures remained when correcting for the age of the participants. Consistent with the literature, Prosocial Actions and Attention to Others' Feelings were positively related to the age of the participants (Zahn-Waxler et al., 1992), but Emotion Contagion was not.

First, the three-factor model appeared a useful representation of the Empathy Questionnaire. One item (item 19) that failed to load on the intended factor, was removed from the scale Contagion. The remaining 19 items represented three one-dimensional factors. Second, the scales Attention to Others' Feelings and Prosocial Actions showed good psychometric properties with good internal consistencies, whereas the internal consistency for Emotion Contagion was lower, but still acceptable. Third, the criterion and concurrent validity of the three scales were good and largely in accordance with the expectations. Some measures correlated to all three empathy levels, whereas other measures differentiated between the levels of empathy. However, additional regression analyses showed that only the intended scales of the EmQue contributed uniquely to the prediction of the criterion variables. These outcomes will be discussed in more detail.

Two scales of the EmQue, Attention to Others' Feelings and Prosocial Actions, were identified in the explorative factor analysis as two distinguishable constructs. Moreover, the two scales also showed associations with the corresponding scale in the empathy observation task but not with the other scale (when corrected for age). In other words, not only could parents distinguish between these two levels of empathy, but children's behavioral responses showed the same configuration as observed by an experimenter.

Yet, the parent questionnaires that correlated with Attention to Others' Feelings and Prosocial Actions did so significantly to both scales, thus did not differentiate between these two levels of empathy. This might support the Russian doll idea by De Waal (2008), implying that Attention to Others' Feelings



is a precondition for children's prosocial behavior. Additional regression analyses however did show unique contributions of these two EmQue scales to the intended scales of the parent questionnaires: Prosocial Actions contributed uniquely to the prediction of prosocial behavior and emotion understanding, whereas only Attention to Others' Feelings contributed to the prediction of recognizing other people's emotional states.

Adequate social skills, emotion understanding and recognition of others' emotions were also abilities related to a stronger tendency for signs of contagion (becoming affectively aroused when another person is in distress). Yet, these associations were less strong than for the other two EmQue scales. Moreover, there was an unanticipated negative correlation with consolation behavior in response to the experimenter's emotional displays (Empathy Task). Despite their adequate social skills as reported by their parents, children who score higher on contagion might function less adequately regarding their social relationships.

Emotion Contagion was also shown to be distinctive from the other two scales with respect to its significant correlation with poor emotion regulation (negative correlations with Emotion Regulation and with Diversion in the Frustration Task). This supports the idea that the tendency to become affectively aroused due to distress in another person can be intensified or prolonged by an inability to regulate the own emotion experience (Decety & Meyer, 2008). Considering also that contagion in this study seems unrelated to age, it does suggest that it involves a trait which is not very beneficial to children's social functioning: these children seem to have difficulties dealing with their own emotional arousal when observing others' distress.

Overall, the outcomes of this study confirmed the three levels of empathy that are frequently noted in the literature to be apparent in very young children. Empathy is considered to be a keystone in children's social development. With the present instrument, future studies could be used to more closely examine the unique predictive value of the different levels of empathy to children's emotional and social functioning; and examine how these levels contribute to different aspects of children's development.

Distinguishing between these levels empirically might also bear important clinical relevance. It could be relevant to know how these levels develop differently in clinical groups that are known for their impaired empathic reactions, such as children with an Autism Spectrum Disorder (ASD)

or deaf children (Dyck, Farrugia, Shochet, & Holmes-Brown, 2004). Possibly, children with ASD attend to others' feelings to an extent that is compatible to typically developing children (Begeer, Rieffe, Terwogt, & Stockmann, 2006). Yet, their ability to act prosocially could be impaired. Alternatively, a discussion is currently going on suggesting a dysfunctional mirror neuron system in people with ASD, although the outcomes are not always supporting this assumption (Raymaekers, Wiersema, & Roeyers, 2009). If true however, children with ASD would also show impairments on the first level of empathy, contagion.

Answers to these questions might give new insights into how to decrease the chances of developing different forms of psychopathology. Note however that this study is only a first attempt in applying this questionnaire. A limitation is that only observable behaviors were taken into account in this study, whereas empathy also concerns one's intentions, which are not necessarily acted out. Research on older children could also employ self-reports and include aspects of empathy that are not always visible, such as the intention for consoling behavior, or the fourth level 'Empathy for Another's Life Condition', as suggested by Hoffman.

