

Teachers' beliefs and practices regarding developmentally appropriate practices: a study conducted in India

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Abstract:

The study assessed kindergarten teachers' beliefs, stated practices and actual practices regarding developmentally appropriate practices (DAP) in India. Forty kindergarten teachers from the urban city of Mumbai (India) participated in the study. Overall, the results indicated that teachers' beliefs were more developmentally appropriate than their stated practices or actual practices in the classroom. Further, teachers congruent in their developmentally appropriate beliefs and stated practices had classrooms with higher scores on actual practices. Lastly, group size was a significant predictor of teachers' actual practices. The implications of these results for the early childhood education system of India are discussed in detail.

Keywords: developmentally appropriate practices | early childhood education | Indian education | teacher beliefs and practices

Article:

Introduction

The position statement on developmentally appropriate practices (DAP), published by the National Association for the Education of Young Children (NAEYC), has strongly influenced the field of Early Childhood Care and Education (ECCE) (Bredekamp, 1987; Bredekamp & Copple, 1997). DAP is based on the child-centred philosophy of education which is a perspective espousing that children actively learn and construct their own knowledge by interacting with peers, teachers and materials. It is assumed that in any country, DAP can serve as the minimum foundation for quality and be measured as a parameter of quality (La Paro, Sexton, & Snyder, 1998). These quality practices are important as they are known to influence children's development. Research has revealed that children placed in these developmentally appropriate classrooms in the United States are more socially mature, less stressed, more creative and show greater affinity towards school than children who are placed in developmentally inappropriate classrooms (Burts et al., 1992; Hirsh-Pasek, Hyson, & Rescorla, 1990; Jambunathan, Burts, &

Pierce, 1999). Thus, DAP's positive impact on children's development has popularised this concept in various westernised countries around the world. However, we are yet to know how these practices are being implemented and interpreted in other developing countries such as India.

The National Policy on Education in India states that child-centred or play-based education be a part of the ECCE system of India. Teacher training institutes also adhere and agree with this philosophy. However, the reality of the ECCE settings in India is very different. Kindergarten classrooms in India are very formal and didactic in their approach to teaching. Thus, teachers trained to be DAP in their approach to teaching may find it difficult to implement or practice this philosophy in their classroom. In other words, there might be a disconnect between teachers' beliefs regarding DAP (their thoughts regarding developmental appropriateness), their stated practices (how they practice DAP in their own classroom from their own perspective) and their actual/observed practices (how they are actually implementing DAP in their classroom from a trained observer's viewpoint).

Link between teachers' beliefs and practices

Research on teachers' thinking assumes that beliefs that teachers hold influence their practices (Isenberg, 1990). Clark and Peterson (1986) state that teachers' thought processes share a reciprocal relationship with their actions, reinforcing the idea that there is a very close relationship between beliefs and practices. However, in the early childhood literature the findings are mixed. Charlesworth, Hart, Burts, and Hernandez (1991), who developed a self-report scale on developmentally appropriate beliefs and practices for kindergarten and preschool teachers, found that teachers' beliefs were more developmentally appropriate than their reported practices, and teachers who felt they had more control over planning and implementing instructions had the highest ratings on beliefs and practices.

Jones and Gullo (1999) administered the *Teacher Questionnaire* to assess teachers' beliefs and practices on developmental appropriateness in first grade classrooms, and subsequently children were assessed on math, science and social skills. Overall, the results revealed that teachers' beliefs were not consistent with their practices. Most of the teachers reported having more DAP beliefs than practices. A few other teachers adopted practices that were neither appropriate nor inappropriate. Overall, teachers who revealed consistency in their DAP beliefs and practices had children with better social and academic outcomes.

Maxwell, McWilliam, Hemmeter, Ault, and Schuster (2001) assessed 69 kindergartens through third grade teachers from public schools using various measures for teachers' beliefs and practices. They found that as grade level increased teachers became less developmentally appropriate in their beliefs. Vartuli (1999) reported similar findings in a study that was conducted with the early childhood teachers from Head Start through the third grade. Overall, teachers reported more developmentally appropriate beliefs than practices. Head Start teachers

reported the most developmentally appropriate beliefs. Additionally, teachers in the Head Start and kindergarten programmes were more congruent in their beliefs and practices than the teachers in the primary grades. Furthermore, teachers with a certification in early childhood education were more developmentally appropriate in their beliefs and practices than teachers who had a certification in elementary education.

Buchanan, Burts, Bidner, White, and Charlesworth (1998) examined teachers' self-reported beliefs and practices using *The Primary Teacher's Beliefs and Practices Survey*. Results indicated that classroom characteristics in terms of class size, grade level, number of children with disabilities and number of children with subsidised lunch, as well as teacher's area of certification and perceived relative influence that the teachers have on the classroom, predicted teacher developmentally appropriate or inappropriate beliefs and practices. All these findings were significant. Further, primary teachers certified in early childhood education and those who perceived they had more control over planning the curriculum of their own classroom were more developmentally appropriate in their practices.

The aforementioned studies indicate how grade level and teacher's training (ECCE or elementary) background can impact teacher's developmentally appropriate beliefs and practices. Following research will highlight teachers' individual characteristics that are known to impact and influence teachers' beliefs and practices.

Individual characteristics

Snider and Fu (1990) found that teachers' knowledge of DAP was related to their level of education. Teachers having knowledge of child development and early childhood education could identify and rate accurately vignettes on teacher-child interactions as developmentally appropriate and inappropriate. Moreover, teachers who had covered more than 10 content areas in child development and early childhood education and had supervised practicum experience in early childhood settings scored well on the measure of developmentally appropriate beliefs. This study broadens our understanding of how teachers' beliefs originate and describes the characteristics of teachers who hold developmentally appropriate beliefs. However, it does not examine factors that affect teachers' attempts to implement their beliefs into practice or imply causal relationship between teacher's education level and change in beliefs and practices.

Cassidy, Buell, Pugh-Hoese, and Russell (1995) conducted a study that highlights the causal relationship between teachers' exposure to college level coursework and their changes in their beliefs and practices. In this study, childcare teachers who attended community college were compared to teachers who did not attend college course scholarship and were later assessed on their self-reported practice, beliefs and subsequent quality scores. They found that teachers who attended college and had taken at least 12–20 credit hours of college course work in early childhood education, psychology, child development and exceptional children were more

developmentally appropriate in their beliefs and practices. They also had classrooms with better global quality.

Mangione and Maniates (1993) found that specialised training increased the developmental appropriateness of preschool and elementary classrooms. Nine preschool and nine kindergarten teachers participated in an extensive training programme wherein teachers were trained to implement a developmentally appropriate curriculum in their classrooms. After the training, teachers reported that they had made substantial changes in their classroom based on their new found knowledge of DAP. Thus, the training experience had brought about major changes in their beliefs about how children learn, and their classroom practices.

McMullen (1999) explored characteristics of preschool and primary teachers who were more or less developmentally appropriate in their practices. Their results indicated that teachers with high internal locus of control and developmentally appropriate beliefs engaged in more DAP. Additionally, teachers with high DAP scores had an academic background in early childhood education or child development at some point in their career, compared to teachers who had low scores on DAP. Furthermore, primary teachers with a degree in early childhood and work experience in a preschool setting were more developmentally appropriate in their practices than teachers who had the same academic background, but had no experience of working in a preschool setting. Additionally, preschool teachers with high personal teaching efficacy (measured using standardised instruments) were more developmentally appropriate in their practices.

Similarly, McMullen (1997) found that early childhood professionals with more education and experience in the field of early childhood education were more developmentally appropriate in their beliefs than teachers or students who had just entered the early childhood field. Additionally, teachers' appropriate beliefs regarding DAP was significantly correlated to their high educational and teaching efficacy scores. That is, teachers who personally believe they can bring about a change in their students performance through their own teaching ability (educational efficacy) and believe that in general teachers can affect students performance (teaching efficacy) have more appropriate beliefs regarding DAP.

To conclude, education seems to be one determining factor regulating teachers' beliefs on developmental appropriateness (Cassidy et al., 1995; Snider & Fu, 1990; Vartuli, 1999). Furthermore, ongoing in-service professional development in early childhood and successful teacher training programmes can be considered equally important in bringing about change in teachers' thoughts and their teaching beliefs (McMullen, 1997). Additionally, research suggests that teachers' confidence in their own teaching abilities may allow them to implement DAP in their classrooms even in the most challenging circumstances (McMullen, 1999).

Literature clearly demonstrates that implementation of DAP is linked to positive developmental outcomes in children. In addition, studies conducted in the United States preschool and

kindergarten classrooms suggest that teachers' beliefs and practices may not always be congruent. However, to date in India there has not been an examination of teachers' beliefs and practices regarding developmental appropriateness using a formal standardised measure. Moreover, comparison between two grade levels on these two aspects (teachers' beliefs and practices) has not been studied. Thus, the study aimed to address the following questions within the Indian context.

1. Do teachers' beliefs (TBS), stated practices (IAS) and actual practices differ across grade levels (upper and lower kindergarten)?
2. Are teachers' stated beliefs and stated practices congruent with their actual practices?
3. Do teachers congruent in their beliefs and practices score higher on their actual practices (CPI) than teachers who are incongruent in their beliefs and practices?
4. What factors best predict (teacher's education, teacher's experience, teacher's beliefs, group size, classroom composition) teachers' actual practices (CPI)?

Method

Procedures and participants

The present study was conducted in the urban city of Mumbai, located in the state of Maharashtra and the western region of India. Mumbai, a predominantly cosmopolitan city of India was divided into four zones; East, West, Central and South. From each of these zones five schools were selected, and from each school two kindergarten classrooms: upper (five-year-old children) and lower (four-year-old children) kindergarten were selected to participate in the study. Each of these schools had English as the primary mode of instruction and teachers were proficient in written and oral English. Thus, the present sample was representative sample of the city of Mumbai, while controlling for socio-economic level (middle income).

A certain protocol was designed for the study. First, classroom observations were conducted and later surveys were distributed. This controlled for any biased responses that teachers could give to the surveys. All the observations were conducted during the morning or afternoon hours, during the time when the half-day kindergarten schools are open in Mumbai. Thus, 20 lower and 20 upper kindergarten classrooms were included in the present study and a total of 40 teachers completed the surveys and were observed in their classrooms.

Tools

Teacher belief scale (TBS-B)

Teacher belief scale (TBS-B) (Charlesworth et al., 1991) consisted of 36 items which teachers rated on a five-point Likert scale, ranging from 1 (not important at all) to 5 (extremely important). It contained questions such as, ‘It is ... that each curriculum area be taught as a separate subjects at separate times’.

Instructional activities scale (IAS)

Instructional activities scale (IAS) consisted of 34 items which teachers rated on a five-point Likert scale, which ranged from never to very often: ‘1’ indicating that teachers never offered those activities in the class, while ‘5’ indicated that those activities were being offered very often in the class. Each item on the scale was either developmentally appropriate (e.g. building blocks) or inappropriate (e.g. rote learning), trying to capture teachers’ stated practices. Both these scales measured teachers’ stated beliefs and practices.

Classroom practice inventory (CPI)

Classroom practice inventory (CPI) (Hirsh-Pasek et al., 1990) was an observational scale that was used to measure actual classroom practices. This measure with two subscales (Curriculum and Emotional Climate of the classroom) contained 26 items which were rated on a 1–5 rating scale; ‘1’ being almost never and ‘5’ being very often. Question such as ‘children use workbooks, ditto sheets, flashcards and other two dimensional learning materials’ tapped into the actual practices of the classroom.

Results

All the teachers who participated in this study were females and taught four- to five-year-old children. These teachers had worked in the field of ECCE for approximately 12 years. Overall teachers’ experience in the field of ECCE ranged from three months to 30 years. Teachers’ education level ranged from higher secondary education (2) (some years of college) to having a masters degree (4) with a mean of 2.87 (some years of college). In the kindergarten classrooms, the group sizes (total number of children in each class) varied from 24–75 children in each classroom with a mean of 46 children. While the ratios ranged between 12 and 75 children per teacher with an average of 35 children per teacher (see Table 1). There were approximately 26 kindergarten classrooms which had two teachers as opposed to 14 classrooms with only one teacher.

Table 1. Demographics including school and teacher characteristics.

	Mean	SD	Min.	Max.
Group size	46.13	12.10	24	75
Ratio	35.47	17.66	12	75

Teacher's experience in the field of ECCE (months)	141.74	94.43	3	360
Teacher's experience working in the same institute (months)	116.15	93.31	1.00	330

Differences between upper and lower kindergarten classrooms

One-way ANOVAs were selected to examine differences between teachers' beliefs (TBS), stated practices (IAS) and actual practices (CPI) in upper and lower kindergarten classrooms. There were no significant differences on the teachers' belief means ($F(1, 38) = .746, p = .393$) or teachers' stated practice means ($F(1, 38) = 1.439, p = .238$) between teachers in lower kindergarten classrooms and those in upper kindergarten classrooms. Similarly, actual practices (CPI) did not differ between teachers in lower and upper kindergarten classrooms ($F(1, 38) = .029, p = .866$). Thus, teachers' beliefs, stated practices and actual practices did not differ between lower and upper kindergarten classrooms.

Relationship between beliefs and stated practices

Correlations were used to determine whether the teachers' stated beliefs and practices were congruent. First, teachers' beliefs and teachers' stated practices (IAS) were correlated. The correlation between the teachers' belief score and teachers' stated practice (IAS) score was ($r = .51, p = .01$). This indicated that there was a positive and relatively strong correlation between teachers' beliefs regarding developmental appropriateness and what they were saying they were doing in their classrooms.

Relationship between stated practices and actual practices

Similarly, teachers' stated practices (IAS) and teachers' observed practices (CPI) were significantly correlated with one another. Teachers' stated practices (IAS) correlated with the (CPI) at ($r = .50, p = .01$). Thus, there is a positive correlation between what teachers say they are doing in the classroom and what was observed in the classroom.

Relationship between beliefs and actual practices

Further correlations were conducted to decipher the link between teachers' beliefs and actual practices (CPI). Teacher beliefs were not significantly correlated with the CPI scores at ($r = .29, p = .06$), which indicates that teachers' stated practices are more congruent with their observed practices than teachers' stated beliefs. This, in part, is explained by the fact that beliefs were the most developmentally appropriate followed by teachers' stated practices and then their actual classroom practices. Therefore, the beliefs are less correlated with their actual practices

than with stated practices because they were found to be the most appropriate while their actual practices were the least appropriate.

Teacher congruency dimension

Prior analysis indicated that there is a positive correlation of ($r = .51$) between teacher beliefs and stated practices. Therefore, teacher beliefs and teacher stated practices shared 25% of their variance with each other. However, to understand the dimension of congruence additional analyses were conducted. The teachers were divided into four different groups of congruence: (1) congruent – both developmentally appropriate beliefs and stated practices; (2) congruent – both developmentally inappropriate beliefs and stated practices; (3) incongruent – developmentally appropriate beliefs and inappropriate practices; and (4) incongruent – developmentally inappropriate beliefs and appropriate practices. These groups were formulated by splitting the teacher beliefs and stated practice scores (IAS) into more appropriate or less appropriate. The scores on both the scales teacher belief and IAS were normally distributed. Thus, a median split of 3.42 on the belief scale and 3.21 on the IAS were considered appropriate for these categorisations.

Accordingly, 20 teachers had appropriate beliefs and 20 teachers had inappropriate beliefs. Twenty-one teachers had appropriate stated practices and 19 had inappropriate stated practices. A teacher who was categorised as having appropriate belief and stated practices was placed within category 1 (congruent with developmentally appropriate beliefs and practices), and likewise other categories were formulated (see Table 2).

Table 2. Congruency category of teachers.

	Appropriate practices	Inappropriate practices	Total
Appropriate beliefs	12 (Congruent)	8 (Incongruent)	20
Inappropriate beliefs	9 (Incongruent)	11 (Congruent)	20
Total	21	19	40

The congruency categories suggested that 17 teachers were incongruent in their beliefs and stated practices and 23 teachers were congruent. However, they varied in whether they were congruent but appropriate versus congruent but inappropriate and also whether they were incongruent with appropriate beliefs and inappropriate practices or vice versa. The researcher was specifically interested in knowing how teachers who have developmentally appropriate beliefs and stated practices compare with other teachers who have both inappropriate beliefs and stated practices, as well as teachers who are incongruent in their belief and stated practices. Based on this idea, teachers were regrouped and two categories were determined. The first category included teachers who are developmentally appropriate in their beliefs and stated practices (group 1). Twelve teachers were included in here. The second category included

teachers who were developmentally inappropriate in their beliefs and stated practices have appropriate beliefs but inappropriate stated practices and inappropriate beliefs but appropriate stated practices (group 2). Twenty-eight teachers were included in this group.

A one-way ANOVA revealed that the mean scores for the observed classroom practices (CPI) did differ between these two groups ($F(1, 38) = 5.63, p = .023$) indicating that teachers who are both developmentally appropriate in their belief and stated practices have more developmentally appropriate observed practices (see Table 3).

Table 3. Mean scores on the across congruency groups.

	Classroom practice inventory (CPI)			
Groups	Mean	SD	Min.	Max.
Group 1 (appropriate congruent) (n = 12)	3.25	.87	1.15	4.42
Group 2 (inappropriate congruent or incongruent) (n = 28)	2.56	.82	1.15	3.88

Factors predicting actual practices

Lastly, six factors (teacher's beliefs, teacher's education, teacher's experience, classroom composition, group size and ratios) were entered into the regression equation to predict the actual practices (CPI). Group size accounted for 52% of the variance and was a significant predictor of actual practices (CPI) (see Table 4).

Table 4. Regression analyses for prediction of observed classroom practices (CPI) with different factors.

Variables	B	SE B	P
Teacher belief (TBS-B)	.409	.121	.356
Teacher's years of experience	.001	.123	.343
Teacher's education level	.185	.118	.360
Group size	-.053	-.668	.000
Classroom composition	.323	.181	.253
F	6.745**		
Adjusted R ²	.52		

** $p < .05$

Discussion

Recent studies conducted in the United States across various grade levels indicate that as grade level increases teachers' developmentally appropriate beliefs and practices decrease (Buchanan et al., 1998; Maxwell et al., 2001; Vartuli, 1999). However, the findings of this study contradict the above results implying that there is little difference between grade levels in terms of teacher's beliefs, their stated practices and actual practices. The schooling system in India and the selection criteria may partly explain these differences. In the present study, lower and upper kindergarten classrooms were selected from the same school. Similar school may mean similar overarching philosophies and equal opportunities or access to similar resources for the classroom teachers at both grade levels (e.g. classroom play materials). This might influence teachers' beliefs in DAP and their chances of practicing in a developmentally appropriate fashion. Therefore, similar scores on all the measures across the grade levels are not surprising.

Link between belief–stated practice congruency and actual classroom practices

Although there is link between teachers' beliefs and stated practices this does not always indicate perfect congruency between developmentally appropriate beliefs and stated practices (Jones & Gullo, 1999). That is, teachers may have developmentally appropriate beliefs but their stated practices may be developmentally inappropriate and vice versa. Charlesworth et al. (1991) found that based on teachers' beliefs and stated practices teachers could be divided into four groups: teachers with more appropriate beliefs and more appropriate practices, more appropriate beliefs and less appropriate practices, less appropriate beliefs and more appropriate practices, less appropriate beliefs and less appropriate practices. This is very similar to the congruent and incongruent groupings derived in the present study from teachers' responses about their belief and stated practices.

Though this is one way of defining teacher's congruence, Vartuli (1999) believes that teachers' effectiveness is only salient when teachers' beliefs and stated practices are congruent with their actual classroom practices. In the current study, teachers with developmentally appropriate beliefs and stated practices had more developmentally appropriate actual practices. Therefore, it is likely that these higher quality classrooms would have best outcomes for children. A closer examination of the data in the present study demonstrated that the 12 congruent teachers (DAP beliefs and DAP practices) were faced with fewer constraints in their classroom. These teachers had classrooms with better ratios and group sizes. Thus, better group sizes and ratios seem to influence teachers' actual practices in the right direction.

Factors predicting actual practices (CPI)

Various studies conducted in the United States have demonstrated that structural factors such as group size and ratio influence classroom quality (Burchinal et al., 2000; Helburn & Howes, 1996; Phillips, Mekos, Scarr, McCarteny, & Abbott-Shim, 2000). Similarly, in the present study group size predicted the actual classroom practices (CPI) for the kindergarten

classrooms in India. However, the concept of group size is understood differently in India as compared to the United States. India being a populous country generally has kindergarten enrollment of between 25 and 75 children (Joshi & Taylor, 2005). The Indian government documents (Agrawal & Usmani, 2000) and other people in the field (B.R. Chhoga, personal communication, June 30 2004) believe a minimum of 20–25 children in the classroom may be manageable. Though the number of children recommended for each kindergarten classroom within a culture varies, smaller group sizes remain the ideal. The fewer the number of children in the classroom, the more appropriate is the care-giving quality and more developmentally appropriate is the curriculum of the classroom (Pianta, La Paro, & Payne, 2002).

In studies on teachers' beliefs, practices and quality, teacher's education has played a very important role. Higher level of teacher's education has been associated with better classroom quality and more DAP (Cassidy et al., 1995; Snider & Fu, 1990; Vartuli, 1999). The results of the present study contradict these findings. However, lack of variability in the teacher education level may explain why education was not an important predictor of observed classroom practices and quality. A majority of the teachers in the study had a bachelor's degree, with very few teachers with some years of college experience or a master's. This is common in India, where kindergarten teachers are required to have at least a bachelor's degree from any discipline. Further, most of these teachers had at least one year of training in ECCE from training schools in Mumbai.

In the Indian situation, the educational level of the teacher needs to be considered quite differently than in the American society. Teachers with bachelors in arts with a psychology background and a home science or human ecology need to be distinguished from teachers coming from other disciplines such as commerce, science, fine arts or arts with no emphasis on psychology. Teachers with home science background generally have a better understanding of early childhood education. For teachers who major in human development and family studies, ECCE is part of their bachelors or masters programme. A similar assumption holds true for teachers with a psychology background who have an understanding of child development. Examining these finer distinctions will enable scholars in the field to understand the impact of teacher education on teachers' beliefs, practices and quality in India. However, in this study teachers could not be distinguished on the basis of their discipline. Teachers with an arts background did not specifically state their majors (psychology, history, geography, philosophy and others). Hence, without this information further distinction within the education levels of the teachers was not possible.

Limitations of the study

There were several limitations to the current study. First, kindergarten classrooms selected within the study belonged to middle- to upper-income socio-economic status group. Second, the study was restricted primarily to one urban city in India, which is Mumbai. Both these reasons limit the generalisability of the results. All the urban cities in India have their unique characteristics.

There is immense diversity within the different parts of India in terms of ethnicity, culture, languages spoken and resources available. Thus, studying one section of the population within a particular city does not represent the whole of India or even Mumbai. However, this study was an preliminary attempt in the field, which not only explored teachers' beliefs and practices regarding developmental appropriateness, but also looked at the variability in quality that exist within the different kindergarten classrooms in Mumbai, India. Lastly, the purposive sampling technique employed in the data collection process might have introduced bias in the study. It is possible that schools that were highly motivated or more interested in the study agreed to participate in the study.

Implications of the study

This study has numerous implications for the policy makers in India. Primarily, the government needs to formulate certain programme standards that are realistic and feasible. Presently, the standards specified for kindergarten classrooms in India are too generic. Some documents provided by the Indian government delineate the requirements for the field. However, the ECCE focus is primarily on the health and the psychological needs of the children, there is also a mention that the curriculum be child friendly and less academic in its orientation (Government of India, 2000). Nevertheless, specific programme standards, which can be followed by every kindergarten classroom in India, are still not in place.

The results of the study have revealed that group size impacts the quality of the classroom and is also linked to teacher's efficacy. Thus, programme standards concerning group size need to be stipulated by the government. Greater specificity in programme standards will enable schools to understand the different parameters of quality. In a similar vein, curriculum standards need to be formulated that can be used by the teachers in their kindergarten classrooms. These standards need to be more flexible and should act as a resource guide for the teachers.

Research in the United States has demonstrated that states that have stringent programme regulations and require centres to follow these regulations have classrooms with better quality (Howes, Smith & Galinsky, 1995; Phillips et al., 2000). This information should be used to improve standards in India. It is also important that adopted programme standards (number of children in the classroom, physical space required for children in their respective classrooms) should be implemented in an appropriate fashion. A separate governing body might be appointed by the government which overlooks these matters. Another contribution of the current study is the use of western measures in a non-western culture. Generally, this is a highly debated topic. Scholars in the field don't recommend using western measures in a non-western culture. However, in this study three western scales were used to explore the arena of teachers' beliefs and practices. All these measures have yielded some interesting findings. Thus, indicating that western measures used in a non-western culture may not be essentially harmful.

Notes on contributors

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