CHAPTER VII

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In the present investigation, an attempt was made to study the nature of relationships of intelligence, parental involvement variables (viz., mothers' and fathers' behaviour involvement, personal involvement, cognitive stimulation, and cognitive behaviour), and children's motivational resources (viz., control understanding, perceived competence, and self-regulation) with academic achievement. A model was proposed (Figure I, p. 133) to examine the role of intelligence and parental involvement in children's academic achievement as mediated by their motivational resources. In particular, it was postulated that intelligence and parental involvement variables affected children's achievement by means of influencing their motivational resources. Path analysis was applied to examine such mediational links amongst the variables mentioned above, and different models were arrived at for children varying with respect to age (i.e., upper elementary and secondary school children) and sex (girls and boys). Moreover, since the present investigator was interested in examining the role of mothers' and fathers' involvement separately, both mothers' and fathers' models were analyzed for the four groups of subjects (viz., upper elementary school girls, upper elementary school boys, secondary school girls and secondary school boys), thereby resulting in a total of eight models.

The values of $R^2$ (Figures VI - XIII) came out to be substantial in all the eight models (varying from .408 to .645), indicating that about 41% to 64% of the variance in academic achievement was being explained by the hierarchy of variables - intelligence, parents' behaviour involvement, personal involvement, cognitive stimulation, cognitive behaviour, children's control understanding, perceived competence, and...
self-regulation. These results show that the variables mentioned above substantially contributed in explaining academic performance, and were crucial in determining the scholastic performance of pupils for both the sexes and age levels considered in the present investigation.

The findings of the present study were generally consistent with the hypothesized model. There were indirect associations between intelligence and academic achievement through the three motivational resources—control understanding, perceived competence, and self-regulation. The results also revealed the indirect links of both mothers' and fathers' involvement indices with children's achievement through the three motivational variables, though these pathways were evident only for some forms of involvement and for some of the motivational qualities. Apart from this, each of the three motivational variables were found to be linked with achievement for almost all the eight models. The results obtained in the present investigation have been discussed below.

An overview of the eight models clearly indicates that the major influential variable in predicting achievement of upper elementary school children (both girls and boys) was intelligence (as is evident from the magnitude of the corresponding beta weights). Thus, intellectual capacity was found to be more important than the motivational resources for determining the scholastic success of younger children. The primary role of intelligence in predicting achievement cannot be denied. This innate force becomes operative right from birth and hence, it is not surprising that it emerged to be most potent in influencing scholastic accomplishments of young school children. Moreover, when children are small, they have not properly developed consistent motivational patterns and qualities which may energize them into doing well academically. This may be the probable reason as to why intelligence emerged to be
more important than the motivational resources for predicting the scholastic accomplishments of young children.

This trend was, however, reversed in case of the secondary school children (both girls and boys). In their case, by and large, motivational resources were found to be more crucial than intelligence in explaining academic achievement. A possible reason for this could be that by the time children reach the secondary school level, they have developed somewhat consistent motivational dispositions that determine their achievement. It is very commonly observed that children with similar intelligence quotients may achieve differentially due to their differing levels of motivation. On the other hand, achievements of children with different intelligence quotients may be similar or comparable due to the intervening motivational variables.

Nonetheless, intelligence emerged to be a significant predictor of achievement across all the eight models examined in the present investigation. In fact, in each of the eight models, intelligence was found to exert a direct influence \((p<.01)\) on academic achievement, as is evident from the direct pathways between the two variables in figures VI - XIII. Moreover, its direct effect on achievement (in all the eight models) was much more than its indirect effect through the motivational variables. This implies that intelligence showed a significant association with achievement even when other variables in the model such as parental involvement and motivational variables were controlled.

The significant relationship between intelligence and academic achievement is well-documented (e.g., Lewis, 1967; Sinha, 1970; Sinha, 1972; Crano, Kenny, & Campbell, 1972; Mathur & Hundal, 1972; Riedel, 1980; Keith, 1982; Sabherwal, 1995).
It is often seen that dull children do not understand things easily, and require more time and effort to retain things. Intelligent children, on the other hand, comprehend things faster, retain them effectively, and are more capable of making profitable use of past experiences and knowledge in future learning situations. Due to their better cognitive strategies and sharper analytic skills which make them memorize, retain and reproduce facts more effectively, intelligent children tend to excel in achievement-related outcomes.

Ellis (1965) has remarked that difference in achievement levels is due to difference in intelligence quotient and is associated with mental age. Children with higher mental age learn more difficult material, so that when they are placed with children of lower ability in the same classroom and with the same instructions, differences in achievement quite naturally result.

Apart from the direct effects of intelligence on achievement, evidence was found in the present investigation for its indirect effects on achievement through the motivational resources too. In case of both mothers' and fathers' models for all the four groups of subjects, all paths from intelligence to the motivational resources of control understanding, perceived competence and self-regulation turned out to be significant (Figures VI-XIII), with the exception of the fathers' model for secondary school boys in which the link between intelligence and self-regulation was not significant at the .05 level of significance (but it was so at the .10 level of significance). Thus, the present findings, by and large, supported the hypothesized paths drawn from intelligence to the three motivational resources in the preliminary model (p. 133). It denoted that intelligence was directly related to these three motivational resources even after controlling for the parental involvement variables. This
implies that intelligent children demonstrated more control understanding, had higher levels of perceived competence and were more self-regulated in their academic behaviour.

Highly significant path coefficients between intelligence and control understanding reveal that intelligent children could understand better how outcomes were related to their own behaviour. Their sharper intellectual skills seemed to have facilitated their understanding of the behaviour-outcome linkage. It is possible that since they could analyze better how significant school outcomes were related to their own behaviour, they continued to display behavioural patterns that were leading to desirable school outcomes, and were liable to discontinue those behavioural tendencies that were leading to undesirable school outcomes.

An intelligent child would understand why he was doing well in studies (it could be due to hard work, unending effort, etc.), and would continue to exhibit those strategies for achieving his scholastic goals. If, on the other hand, he was not doing well in school, he could still understand the underlying causes (such as illness, laziness, lack of effort, etc.). Thus, intelligent children seemed to show a deeper understanding of the causes of success and failure outcomes, and had greater probability of displaying desirable behavioural acts, and giving up undesirable ones to achieve important school outcomes.

On the other hand, less intelligent children are liable to have less sharper cognitive and analytical skills, and they perhaps, would not appropriately understand this contingency between behaviour and outcomes. As a result, they were liable to show lower levels of control understanding.
Another possible reason could be that intelligence has been found moderately related to IAR (intellectual achievement responsibility; all, Katkovsky, & Crandall, 1965), a construct related to locus of control. So, it seems reasonable that intelligent children would tend to e greater responsibility for their intellectual achievements as compared to children who are not so intelligent. Consequently, they more readily see their successes and failures in an objective manner. In the words of Crandall, Katkovsky, & Crandall (1965, p. 81): "Because the greater adequacy of that instrumental behavior has enabled him to manipulate his environment more successfully than the child, he has had more evidence that he can control what happens in and can achieve success more frequently and with greater ease than the child with less ability. In addition, it may be that he accepts the blame for those failures which he does experience because his generally competent behavior has given him the security to do so." Thus, an intelligent child will tend to show more responsibility for intellectual achievement-related successes and failures, and thereby exhibit greater control understanding in the cognitive domain.

Highly significant paths between intelligence and perceived competence in the cognitive domain suggest that intelligent children tend to perceive themselves as more competent than their not so competent peers. It is so because their higher intellectual capabilities assisted them in achieving cognitive outcomes, thereby inculcating in them a sense of academic competence and adequacy. Less intelligent children, on the other hand, are not able to achieve so well in academic/cognitive tasks. Moreover, they mostly receive a negative word from teachers and parents, and are usually made aware of their
inefficiencies, as are also reflected from time-to-time by factors like poor performance in academics, lesser ability to solve problems, etc. As a result, their feelings about self-capability would be lowered, and they would perceive themselves as having lower levels of competence.

Results arrived at by other investigators too, provide evidence for the association between intelligence and perceived competence. Callahan, Cornell, & Loyd (1990) reported that high ability subjects had above-average academic and overall perceived competence, although intelligence was negatively related with perceived competence in the non-academic domains.

The findings of the present investigation revealed significant paths from intelligence to self-regulation too, which is in line with the hypothesized relation among these two variables presented in figure I (p. 133). These positive links support the view that intelligent children are more autonomous in their academic activities as compared to the less intelligent ones. Intelligent children, due to their superior mental skills, do not require much help and guidance from others. Since they are capable of doing academic tasks on their own without depending on external sources, they tend to become more and more independent, confident, and self-reliant as far as academics are concerned. Moreover, since these independent and self-determined efforts are consistently reinforced either directly (through high marks, prizes, rewards, etc.) or indirectly (through praise, etc.), they tend to be intrinsically motivated into performing such school-related activities.

Less intelligent children, on the other hand, do not display high levels of autonomy in their behaviour. Since they are unsure of their capacities and performance, they tend to depend more on others for guidance. Eventually, this may form an integrated part of their
nal make-up, and they may end up doing a task not for the self, but due to other reasons such as obeying rules, gaining roval, avoiding negative consequences, guilt, anxiety, and the other possible reason for the association between intelligence regulation could be the former’s association with control ding and perceived competence. Since intelligent children will how more understanding of the behaviour-outcome linkage, l view events and outcomes as more controllable, and this ster in them feelings of confidence. Moreover, since they will gard themselves as academically competent, they shall have all reason for being autonomous and self-determined in achieving icmic goals and targets.

Semberg & Zimmerman (1993) state that as compared to the subjects, gifted children spontaneously utilize self-regulatory strategies more frequently and effectively, and they tend to these strategies to new tasks. These theorists, in fact, point out regulation training may further enhance gifted children’s achievement. Therefore, they suggest that measures of self-may be resourceful in diagnosing giftedness.

idence for the relationship of intelligence with motivational ns of children has been provided by other investigators too. For Davis & Connell (1986) reported that as compared to the group, gifted children exhibited higher levels of self-evaluations tence, feelings of mastery and preference for independent making. Average subjects, on the other hand, displayed lesser ding than gifted subjects about the reasons for success and comes.
Vallerand, Gagné, Senécal, & Pelletier, in a recent study (1995), found that gifted students perceived themselves to be more competent and intrinsically motivated towards school activities than regular students.

The relationship of intelligence with other motivational variables has also been explored. For example, a study by Kagan, Sontag, Baker, & Nelson (1958) revealed that gains in intelligence scores are related to high need for achievement, competitive strivings and curiosity about nature. Kagan & Freeman (1963) found that in case of boys, the only consistent correlate of high intelligence in childhood is involvement in intellectual mastery during adolescence. For girls, intelligence was found to predict several adolescent variables including concern with intellectual competence. Moreover, intelligence may be related to intrinsic motivation, and this, in turn, may be related to such motivational resources as considered in the present context (Deci & Ryan, 1993).

Such studies highlight the ways in which intelligence could lead to the development of motivational resources of control understanding, perceived competence, and self-regulation in children.

So far, only one aspect of the mediational model was dealt with, i.e., the possible pathways from intelligence to motivational resources and academic achievement. Another aspect of the hypothesized model was the possible links of parental involvement variables with children’s motivational qualities and achievement which has been dealt with below.

An overview of the eight models revealed that some systematic trends were emerging as far as the relationship of parents’ involvement with children’s motivation and achievement was concerned. The trends
rent depending on the age level of the subjects, with the
s in the models being more marked for older school children.
hen the various models for upper elementary school children
pared (Figures VI-IX), it was found that both mothers’ and
cognitive stimulation” was influencing (some or the other)
al resources of girls, while in the case of boys, parents’
behaviour” was found to do so. This was true for not only the
mentary school children, but even the secondary school
with the exception of secondary school boys wherein fathers’
stimulation was found to affect their control understanding).
ings reveal the importance of parental cognitive stimulation for
that of parental cognitive behaviour for boys.
is significance of parents’ cognitive stimulation for girls may
ed by the fact that daughters are usually more dependent on
nts as compared to sons. It is possible that since girls require
assurances from time-to-time, parents’ cognitive stimulation
fy this need of theirs, and affect their motivation. Moreover,
to tend to be more independent, seek lesser the verbal
\ement provided by their parents to involve in cognitive
Infact, they may perceive such verbal statements and
ments as interfering with their sense of autonomy and
nce. Consequently, when parents encourage their children to
emselves in cognitive activities such as going to the library,
etc. or reading books, speaking correct language, learning new
derstanding the meaning of difficult words, and the like, boys
to perceive them as "bickerings", and consequently, they may
motivated by such parental acts as compared to girls, who
w such behaviours as depicting that their parents are showing
rest and concern for their well-being. Moreover, it also tends to
girls', especially Indian girls', sense of emotional dependency
parents. As a result, girls' motivation may be more affected by
cognitive stimulation as compared to boys.
boys, on the other hand, may not be motivated much by such
suggestions, which may be perceived by them as "controlling,
prospective, instructional" attitude of parents rather than "involving". 
boys, however, be much influenced by implicit and indirect modes
able behaviour such as parents' cognitive behaviour, which may,
denote the amount of importance that parents attach to
intellectual tasks. Thus, it is possible that indirect modes of
sent such as parents' cognitive behaviour may motivate boys
y may be better able to realize the importance of cognitive
and strategies. As a consequence, boys may be more
be motivated by these indirect, suggestive actions, and may be more
be compared to girls.
ese findings seem to be more meaningful when the changing
context in India is considered. In the past, girls were usually
and neglected by parents, and were generally expected to take
role of "care-takers of the family". However, due to social
the outlook towards a girl child is being drastically changed,
being viewed as more competent, progressive and capable of
"meaningful" roles in the social milieu, and not simply being
es" when they grow up. These changes are all the more
in the "educated" strata of the society, i.e., in middle and upper
lass families. Parents in these families no longer comply with
ditional" ways in which women were regarded. As a
once, they want their daughters to play significant roles and
ucial positions in the society when they grow up, just as their
This can only be achieved through education and proper choice
ession. Consequently, parents have begun to show concern and
ent for the "girl child" too, something that she was being
of in the past.
ese changes in beliefs and opinions that parents hold, are also
ulated in children, with a girl as much wanting to achieve
nd fame as a boy. Girls, even young ones, are aware of the
hat a woman used to hold in the traditional Indian set-up, and
would want now. Due to this social change, girls have
or the increased "involvement" and "concern" that their parents
educating them and bringing them up, something that was
stricted to boys only. Consequently, parental involvement, care
rn has begun to hold a lot of relevance and importance for
ivating them to do better. This offers another possible
n as to why "direct" parental involvement indices such as
stimulation seemed to be more motivating for girls, while
odes of involvement such as parents' cognitive behaviour were
ivating for boys.
hen the models obtained for the secondary school children were
(Figures X-XIII), analyses revealed that mothers seemed to
re meaningful role in determining motivation/achievement of
school girls, while fathers seemed to be doing so for
school boys. Thus, the findings suggested within-gender
parents to their children, i.e., the relevance of mothers for
thers, and that of fathers for older sons. A possible reason for
be that as they grow older, girls begin to identify themselves
mothers, while boys do so with fathers. As a consequence,
children tend to adopt similar attitudes and values as their same-sex parents have. So, when mothers show involvement in the education of their children, older daughters especially are more motivated by such maternal actions. They begin to realize the importance that their mothers attach to educational outcomes, and consequently, they too, tend to adopt similar attitudes towards cognitive outcomes as their mothers have. This, in turn, motivates them to do well cognitively. The same seems to hold true for the father-son relationship. When sons grow up, the turmoil revolving around adolescence subsides, and they begin to identify with their fathers, having similar attitudinal patterns and belief systems as their fathers have.

Another possible reason for this could be that as children grow older, they tend to share their thoughts, emotions, secrets more with parents of the same sex. Girls tend to become closer with their mothers, while boys tend to become closer with their fathers. As a result, they are more influenced by the behaviours and actions of the "same-sex" parent, and this may, in turn, explain as to why they may be motivated more by involvement displayed by the "same-sex" parent than that of the opposite sex.

Such links may not simply be from child-to-parent but even from parent-to-child. That is, parents themselves may behave in "sex-coded" ways that may facilitate modelling and internalizing of value systems on the part of their children of the same sex as theirs. This possibly explains the apparent salience of mother-related variables for older daughters, and that of father-related variables for older sons.

Infact, a look at the mothers' model for secondary school boys (Figure XII) reveals that mothers' involvement indices were not contributing significantly towards the motivational resources/
tent of their older sons (the only exception being the single path
thers' cognitive behaviour to secondary school boys' perceived
ce). The same was found to hold true for the fathers' model for
y school girls (Figure XI). In their case, indices of fathers' modal
ent were not found to directly affect any of the motivational
or academic achievement of their daughters. Such findings
icate that in both these cases (viz., mothers' model for
y school boys and fathers' model for secondary school girls),
s obtained were more of "cognitive-motivational" models of
ment, with the latter being mainly determined by intelligence and
ational resources of children. Thus, path analyses revealed that
of the child and that of parent was of utmost importance in
such parent-to-child effects, with parents influencing the
on of older children of the same sex as theirs, and not that of the
sex.
hen each of the models was compared across the age level of
it was found that in case of the mothers' model for secondary
girls (Figure X), both mothers' behaviour involvement and
stimulation (each being a "direct" mode of involvement) were
fluence the motivational resources of older girls, while in
the mothers' model for smaller girls (Figure VI), there was only a
pathway from mothers' involvement indices to motivational
, viz., from mothers' cognitive stimulation to girls' perceived
ce. Similar was the case for the fathers' model for upper
ry versus secondary school boys (Figures IX and XIII
ely), with fathers' involvement contributing in diverse ways
the motivation/achievement of older boys as compared to those
er ones. Such findings suggest that parents' involvement may

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more crucial in determining the motivational/academic of children when they grow up as compared to when they are his is especially true for the "within-gender" effects, i.e., for child pathways with each, parent and child being of the same

while the means obtained in the present investigation (Appendix to demonstrate that parental involvement declines with the e, path analyses, however, reveals that mothers' involvement all the more crucial for determining the motivational/academic for girls when they grow up, and the same holds true for ud sons. Thus, the present findings demonstrated that parents' ent (especially by parents of the same sex as that of the child) s the motivational qualities and dispositions of children in a ways when they grow up, as compared to when they are small. words, the present results reveal the significance of involvement 'n-up" children.

is is contrary to a layman's notions about parental ent. What a common man usually believes is that parents' ent in children's schooling is especially important when the small. This is so because parents generally believe that younger are in greater need of help and guidance as compared to older ever, the findings of the present investigation have exhibited reverse, i.e., although parents' involvement is significant in ng children's outcomes when they are small, it becomes all the eficial, motivating, and deterministic when children grow up. other interesting finding which was revealed when all the eight were compared was that behaviour involvement shown by " was found to influence the motivational resources of children
ompared to that displayed by fathers. An overview of all the er" models (Figures VII, IX, XI, and XIII) shows that in all dels, fathers' behaviour involvement was not found to in a significant way towards the motivation/achievement of ren. A possible reason for this could be that due to time is, fathers are not in a position to frequently interact with their hool and teachers (This is also 'depicted by the means, with ans being reported for fathers' rather than mothers' behaviour ent by upper elementary as well as secondary school girls and a consequence, they show lesser interaction with their child's d this lowered level of interaction may not really motivate the others, on the other hand, are able to have adequate interaction school due to their shorter working hours. Moreover, since the re more "in touch" with the child's school, they may be more the latest developments as far as the child's scholastic life is l. As a result, they may be better able to monitor the child's and outcomes. Looking at the other side of the mirror, since may be aware of the greater pains that their mothers are taking ared to fathers) in meeting the school teachers, attending school , events, etc., children may be more motivated by such maternal s compared to paternal ones. This possibly explains the links m mothers' behaviour involvement to upper elementary school l secondary school girls' motivational resources (Figures VIII espectively). These results must, however, be considered re in light of the weakness of the present findings.

other significant fact found was that parents' "personal" ent was unrelated to the three motivational resources of

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in all the eight models (Figures VI-XIII). It was directly linked to academic achievement only in case of the father's model for school boys (Figure XIII). Such findings demonstrate that involvement on the part of parents may not motivate their children to do better. Parents' personal involvement may be perceived by children more as a source of emotional support and warmth than that of other factors. It is also possible that parental personal involvement is perceived as intrusive and interfering by children and thus, not have any positive effect on their motivational dispositions. Children, at times, may feel that their parents are always wanting to know about their activities, what they do in school, what kind of friends they have, and where they are going. All this might be perceived by them as "interfering" rather than "involving". Besides, it is possible that such kind of involvement is more related to other outcomes in children, such as emotional and social adjustment.

We can speculate that by showing personal involvement in the academic and social lives of the child, parents may convey the message that the child is "important" for them, and is "cared for". This may, in turn, make the child feel that he is a "significant" member of the family. In contrast, personal involvement might still be associated with a sense of warmth and belongingness. It may not, however, lead to a sense of control understanding, competence, and self-regulation. Parents' personal involvement in the academic and social lives of the child may fail to enlighten the latter about the association between their behavioural acts and significant outcomes. It may not make the child believe that outcomes are controllable, and can be determined by their actions. Nor can it induce feelings of competence in the child to produce desired outcomes. Moreover, parents may show more personal involvement.
ent for children who need greater academic help and guidance. ntly, it may, in some of them, promote feelings of ncy", and thus, interfere with the promotion of autonomy. As a
may not inculcate feelings of control understanding, ce, and self-regulation in children.
rents, especially in the Indian social set-up, have been observed keen interest in bringing up their children. This is all the more e for middle to upper middle class families, in which parents t pains in educating their children properly so that they may to be successful and accomplished members of the society.
, the middle-class parents know that if they want their children e professional success and pursue good occupations in future, t important resource to achieve this is "education". ently, right from the child's birth, they tend to show a lot of care ern for the child. This is true for not only parents of "capable, t" children, but also those of lesser intelligent ones. So, involvement may be manifested, irrespective of the child's ents, by almost all the parents belonging to the middle class he Indian set-up.
le probabilities pointed out above are though neither exhaustive irically validated, yet they tentatively show that personal ent of parents may not be related to children's motivational

nteresting finding pertaining to this dimension of ent that was revealed by the present results was that personal ent by "fathers" rather than by "mothers" came out to be it in directly predicting academic achievement of secondary oys. This salience of fathers' personal involvement in
The academic achievement of their older sons has been shown below. In the Indian cultural context, mothers, especially in the middle-class families, are usually perceived by sons as "warm, friendly, and loving" persons whom they can "bypass" or "overlook". This does not mean that boys are not emotionally attached to their mothers, but rather that boys are not so "afraid" of their mothers (as they are of fathers). Moreover, mothers always seem to be more personally involved than fathers. So, it is possible that mothers' personal involvement may not be perceived by their sons as so "meaningful" as that of fathers.

Fathers, on the other hand, are usually regarded as "authoritative - firm". The "fear of father" is there in most of the Indian ass families, and nourishes in the hearts and minds of their sons. Consequently, personal involvement displayed by "fathers" something that can have more significant repercussions, and keep their sons "on their toes". It would make a difference if sons take interest in their sons' whereabouts, activities, and the sort of paternal monitoring may make their sons spend more time doing homework, etc. Also, they may spend lesser time around with friends, staying away from home, etc. Thus, involvement may exert considerable influence on other such as time spent on homework (Keith, Reimers, Fehrmann, Aubey, 1986; Fehrmann, Keith, & Reimers, 1987), of homework (Keith et al., 1994) and time spent watching TV, and these, in turn, may determine their scholastic achievement.
ides, research too indicates that authoritative parenting leads to success. This has been found in younger adolescent samples (Elmen, & Mounts, 1989; Patterson & Yorger, 1991). Findings by Steinberg, Lamborn, Dornbusch, & Darling (1992, 1989) demonstrate that “Parental involvement is much more likely to do adolescents school success when it occurs in the context of an home environment”. This is in line with the present findings which indicate that personal involvement, especially by fathers generally viewed as more authoritative in the typical Indian (SS families) had a beneficial impact on young boys’ development.

Moreover, it is important to note that these subjects were about 13 years old and thus, in mid-adolescence. Family turmoil and involving around adolescent development may have subsided by this age, cooperation (Youniss & Smollar, 1985) and (Grotevant & Cooper, 1985) develop between parents and sons, and there is also a reduction in conflict (Steinberg, 1981). Paternal personal involvement may be regarded by their sons in a more positive and appreciable way. As a result, it is likely to have a beneficial impact on their school-outcomes.

Besides, it is usually observed in our culture that boys are more likely to go astray” than girls. They are more likely than girls to miss school, show undesirable forms of behaviour such as smoking, drugs, alcohol use, delinquency, and crime, especially in adolescence. All such behaviour would be related to lower achievement. Consequently, it would be very essential if low deep concern about their (respective) son’s usual...
its, what kind of friends he has, what he does when he is away, and the like so that desirable behaviours may be reinforced and irritable ones may be given up. Empirical studies too, indicate levels of involvement are related to disobedience and and that parental involvement is linked with children's al regulation (Hatfield, Ferguson, & Alpert, 1967).

Over, when children grow up, they are in greater need of guidance. The courses become more and more complex, and ids and pressures on them for academic excellence are also e rise. Besides teachers' help, they may also require the help of ts to guide them scholastically and vocationally. Out of the ts, fathers are usually sought after since they are considered by o be more "intellectual" and aware of facts. This was also by the means found in the present investigation (Appendix H), ticated that fathers apparently displayed higher levels of stimulation and cognitive behaviour as compared to mothers. equence, fathers' personal involvement, which includes factorselp, advice and guidance for academic affairs, would be more nd by children as compared to that of mothers.

Above-mentioned viewpoints offer different explanations as hers' personal involvement turned out to be directly related to academic achievement (while parents' personal involvement ated to children's motivation/achievement in the rest of the lels).

Sum up on the role of parental involvement variables in the al models analyzed in the present context, it may be said that nd fathers were found to contribute towards the motivational and academic achievement of their children in multiple,
lys, with different aspects of their involvement being crucial in generating different outcomes for children varying with respect to the sex. The differences which emerged for the mothers' and fathers' for the four groups of subjects substantially supported the investigator's notion that both should be assessed separately in order to have a more comprehensive understanding of the diverse ways in which both mothers and fathers could contribute towards their motivational resources and consequently, academic achievement. The differences which have been highlighted by the findings clearly show that what may be crucial for one parent may not be so for the other for a specific group of subjects. Moreover, parents may differentially contribute in determining their children's outcomes directly and indirectly when children are small as well as when they grow up. Parents may also contribute in a way for sons as compared with daughters. All these findings support the adequacy of having analyzed the diverse models in the context.

To date, the links of the exogenous variables, viz., intelligence and involvement variables with children's motivational resources have been analyzed. Another crucial aspect of the mediational models was the relationship between the motivational variables and academic achievement. In this investigation, each of the three motivational resources, viz., understanding, perceived competence and self-regulation were hypothesized to be linked with academic achievement. This was found to be the case with both mothers' and fathers' models for all the four groups of children with the exception of mothers' model for upper elementary boys (Table 17), wherein self-regulation was not significantly linked with academic achievement (significant at the .10 level only).
Thus, the hypothesized links between each of these motivational variables with achievement, by and large, found support in the present findings. Path analyses revealed that even after controlling for all other variables in the proposed model, each of the motivational qualities was linked with scholastic achievement. In fact, as pointed out earlier, motivational variables, by and large, turned out to be most important predictors of academic accomplishment for the secondary school subjects (both girls and boys), and were amongst the significant predictors of achievement for upper elementary school children.

Such findings demonstrate the important role of motivation in determining academic outcomes of children varying in age and gender. This driving force energizes individuals into pursuing activities that may lead to the successful accomplishment of educational goals and objectives. Thus, it is not astonishing that these two sets of variables, viz., motivation and academic accomplishments are inter-linked.

Even in our day-to-day lives, it is often observed that children with lower levels or inappropriate patterns of motivation do not do well in studies, inspite of their high level of intelligence, while those who display effective motivational qualities fare well academically. Motivation thus, provides the fuel for learning, and energizes an individual into doing well academically. No learning is possible without the motive, the desire, the quest to learn.

A number of researchers endorse this association between motivation and achievement (e.g., Pelechano, 1973; Gordon, 1981; Tamir, 1990). Motivational processes have been found to affect children's acquisition, transfer, and use of knowledge and skills (Dweck, 1987), thereby indicating the ways in which they might determine achievement.
In each of the eight models arrived at on the basis of path analyses in the present investigation (Figures VI-XIII), there was a direct link from control understanding to academic achievement. This liaison indicates that when children show adequate control understanding, i.e., they comprehend well the reasons as to why they are meeting with successes or failures in school-related outcomes, they tend to do well in studies. Until and unless children show control understanding, they will have little reason to modify their inappropriate behavioural acts and replace them by more effective ones in order to produce desired effects. By exhibiting adequate control understanding especially in the cognitive domain, children are able to improve upon themselves, and are in a position to accomplish their significant academic goals with greater ease and facility. For instance, if children do not understand why they are achieving poorly in examinations, they cannot modify their behaviour since they themselves cannot perceive the true cause of their lowered academic performance. On the other hand, if children possess the knowledge as to why they are doing well or poorly in school, they are more likely to manifest those behaviours that had earlier led to desirable school outcomes, and give up those behavioural tendencies which were leading to undesirable outcomes.

Empirical evidence has been provided for the association between these two variables by Avery & Ryan (1984), Connell (1985), Skinner, Wellborn, & Connell (1990), Grolnick, Ryan, & Deci (1991), and Grolnick & Slowiaczek (1994). It has been pointed out that unknown control (reverse of control understanding) is relevant in explaining variations in self-related and performance variables in the cognitive domain (Connell, 1981; Harter & Connell, 1984). Perceptions or even illusions of control over the environment have been reported to affect
in various aspects of life, including learning (Lefcourt, 1973; & Monty, 1977).

Another possible explanation as to why control understanding achievement is that the former may affect other variables such as external control, which, in turn, affect achievement-related. As indicated by Connell's (1985) findings in the cognitive development domain, unknown control was related to powerful others’ control and to achievement. Such a finding suggests that maybe, children displaying control understanding are more liable to assume responsibility for their successes and failures. In turn, it has been indicated that expressing stronger beliefs in personal responsibility for their achievements and failures in relation to their classmates antly display more positive feelings toward school and learning (Epstein & McPartland, 1976; Wolf, 1979).

Internals as compared to externals have also been reported to be able to regulate their behaviour in a learning situation by the cue of reinforcements (James, 1957; Rotter, Seeman, & Liverant, 1959; Crandall, Katkovsky, & Crandall, 1963). As a result, they tend to show more expectancy learning on both experimental learning tasks and on generalized measures of performance such as scholastic achievements. Internals as compared to externals, are usually more self-oriented and less variable in learning. When faced with a situation, they tend to resist more to expectancy extinction than externals. Besides, they spend more time than externals in intellectual and academic pursuits (Crandall, Katkovsky, & Crandall, 1963) and perceive themselves to be effective, assertive and competent (Solomon & Oberlander, 1974).
Emotivity has also been found to be positively related to achievement motivation (Cardi, 1962), academic motivation (Crandall, y, & Crandall, 1965), level of aspiration (Rotter, 1966), on seeking (Davis & Phares, 1967), number of activities in (Brown & Strickland, 1970) and delay of gratification (d, 1970). These relations of internality with learning-related explain, to some extent, the way in which control ding may foster academic achievement. It is possible that since hight on control understanding show a deep comprehension of viour-outcome linkage, and because these perceptions are l from time-to-time (as is evident by their better learning and outcomes), they may perceive themselves more and more as able of exerting control over their environment. Consequently, ings of self-confidence may also be enhanced; they may to display appropriate behaviours even in the absence of nents, and resist more to extinction. Moreover, since they themselves as more controlling, effective and confident, they higher levels of aspiration and learn more quickly by the cue einforcements.

Part from this, unknown control in the cognitive domain has nd to be negatively related to scores on mastery motivation, us judgement, teacher and child ratings of cognitive ce (Connell, 1985), and to children's self-reported adjustments lucational set-ups (Harter, 1983c). Investigators (e.g., Connell, rter & Connell, 1984) contemplate that knowing the sources of perating in the classroom may be imperative for competent ace and intrinsic motivation. Thus, it is possible that children hight on control understanding, due to their greater adequacy of

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appropriate behaviours in order to produce significant may feel more competent and autonomous, and shall have greater chances of achieving success scholastically since d be intrinsically motivated to do so.

art from control understanding, perceived competence too, was be significantly associated with academic achievement. This mat children, who perceive themselves to be competent enough y, are more motivated into academic activities perhaps because more sure of themselves and their abilities. Their beliefs about titive competence become deterministic in ascertaining their dmements in academics.

hen students perceive themselves as competent enough to nstrumental actions to achieve scholastic success, it induces of self-confidence, self-worth, and self-regard, and as a ace, they tend to fare well academically. On the other hand, nay not be able to perform well in academics because of their ybe, erroneous ones) of incompetence and inadequacy. Such nay feel that they are incompetent of doing well in cognitive their motivation may be lowered. This has been pointed out in ty Abramson, Seligman, & Teasdale (1978), which indicates ctions of incompetence lead to low motivation and tion.

us, children’s judgements of competence may be critical in g and regulating achievement behaviour (Lynch, 1981; Harter, arkus & Nurius, 1984), maintaining achievement motivation .978, 1983a), and promoting intrinsic motivation (Anderson, n, & Reznick, 1976; Fisher, 1978; Harter, 1978, 1981a; Deci 1985a; Boggiano & Ruble, 1986). This shows that children
eptions of higher cognitive competence as compared to their peers, be more intrinsically motivated into academic activities, and likely to maintain such achievement-oriented behaviour. 

Addition to this, children's judgements of competence have been considered to be crucial in promoting subsequent interest in an academic activity (White, 1959; Deci & Ryan, 1985a; Bandura, 1986), affecting self-control (Phillips & Lord, 1980), and determining goal choices, self-efficacy and affective responses to achievement outcomes (Bandura, Weck & Bempechat, 1983). These variables, in turn, may be instrumental in enhancing the scholastic achievement of "competent" students.

Apart from this, research findings (e.g., Harter, 1982) suggest the links between perceived cognitive competence and autonomy for challenge, independent mastery, and curiosity. This means that children who consider themselves as highly efficacious in managing and challenging situations (Bandura, 1977b). They may be more likely to search the unknown, and this quest and curiosity for knowledge and accomplishing challenging tasks may further sharpen their skills. As a result, they would be better able to use effective strategies which may affect their learning and learning-related outcomes. Besides, such children will also show more emotional resilience and will be more self-reliant (Wagner & Phillips, 1992). Consequently, they shall not rely so much on external feedback, guidance, and shall be more self-determined in their learning. Empirical evidence suggests that such children will intensify their efforts when performance falls short of their desired goals (Bandura & Cervone, 1981) and persevere in spite of repeated failures (Brown & Inouye, 1981). They shall thus, not be so disheartened by failures.
and shortcomings, and shall display greater persistence in accomplishing their educational goals.

On the other hand, children who believe themselves to be incompetent have impaired problem solving (Dweck & Goetz, 1978; Elliott & Dweck, 1981), dysfunctional causal inferences about achievement outcomes (Ickes & Layden, 1978; Nicholls, 1979), attenuated achievement targets (Bandura & Dweck, 1981), lower levels of self-initiative in school settings (Beigel, 1982) and avoid challenging tasks (Harter, 1983b). Under-estimation of one's abilities leads them to adopt lower standards and expectancies for success (Phillips, 1984) than what their true abilities would predict, and all this adversely affects their academic outcomes and accomplishments. Since they are unsure of themselves, they rely more on external feedback than do children with positive self-perceptions (Phillips, 1987). They lack self-initiative and persistence, particularly when faced with discouraging feedback. Moreover, their greater reliance on external feedback suggests that such children shall be particularly vulnerable to internalizing other peoples' (such as their parents', teachers', peers', etc.) less favourable ability judgements regarding them. This will unduly distort their self-appraisals, and they will unjustifiably lack confidence in their ability to do well in academics, which will reflect upon their academic pursuits, targets and accomplishments.

Similar association between perceived cognitive/academic competence and achievement has been reported by other researchers (e.g., Harter & Pike, 1984; Chapman, Silva, & Williams, 1985; Stigler, Smith, & Mao, 1986; Grolnick, Ryan, & Deci, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Bandura, 1993; Maqsud, 1993; Sink,
ther lend support to the present findings. Art from control understanding and perceived competence, ation too, was found to show significant links with academic ent, as indicated by the results arrived at on the basis of path n the present investigation. These findings are in line with previous researchers (e.g., Grolnick, Ryan, & Deci, 1991; Deci 1993; Vallerand & Bissonnette, 1993; Wentzel, 1993; Grolnick czek, 1994; Schultz, 1994).

definition, self-regulatory behaviour is intrinsically motivated, self-determined and emanates from one's core sense of self. ls thus, feel more responsible for tasks which they themselves nd maintain. On the other hand, controlled orientation is not lly motivated, whereby an individual may not be truly in performing a specific task, but may feel forced into doing it. ople are internally motivated and perform activities on their tend to perform these better and more effectively than when not internally motivated to do the same. Moreover, there is onsensus that greater pressure and tension are associated with emphasizing "control" rather than autonomy (Ryan, 1982; ms, & Koestner, 1983). According to Deci & Ryan (1987, p. Autonomous activity is regulated more flexibly, with less nd more positive emotional tone, and this flexible use of on often results in greater creativity and conceptual ding.... By contrast, controlling events and contexts conduce ompliance or defiance but not autonomy. Control, whether by orces or by oneself, entails regulatory processes that are more volve greater pressure and tension and a more negative
tone, and result in learning that is more rote oriented and "rated".

Empirical findings too, reveal that intrinsic motivation tends to be ed by the use of threats (Deci & Cascio, 1972), deadlines . DeJong, & Lepper, 1976), surveillance (Lepper & Greene, nt & Ryan, 1985) and evaluation (Maehr & Stallings, 1972; 74; Benware & Deci, 1984; Harackiewicz et al., 1984). A f researchers (e.g., Lepper & Greene, 1975; Boggiano & Ruble, rackiewicz, 1979; Koestner, Ryan, Bernieri, & Holt, 1984) onstrated the effects of such regulatory events (e.g., rewards, , etc.) on intrinsic motivation and related processes. These e also congruent with McGraw's (1978) views that external s narrow the task focus and interfere with heuristic outcomes.

Another reason as to why self-regulated individuals tend to better academically is that they are liable to engage in an or growth and challenge. On the other hand, less autonomous ls perform a task just to achieve "self-imposed" or externally " criteria. Consequently, such people are more pre-occupied ring or defending themselves, and are therefore, less learning- and less self-determined in performing an activity. As a result, ices of success at that activity are also somewhat lowered.

An alternate explanation may be that self-regulatory styles predict onceptual learning. This fact has been pointed out by Grolnick (1987a). They compared two directed learning contexts (one g and one noncontrolling) and a nondirected spontaneous-condition. It was found that "both the non-directed and the iving directed-learning sets resulted in greater interest and ll learning compared with the controlling set, presumably
because they were more conducive to autonomy or an internal perceived locus of causality" (p. 890). Such findings indicate that when learning is conducted in an autonomous manner, it tends to result in more comprehensive and integrated understanding. As a result, such tasks and activities tend to be learned and retained better as compared to those that are not autonomously initiated and learnt. The authors further state that "when one learns in order to achieve a grade or receive a reward, then the material tends to be primarily instrumentally salient. When the goal is attained (e.g., the test completed), the material is no longer relevant and, thus, no longer warrants further processing or retention. It is thus subject to a more rapid rate of loss" (p. 891). The authors refer to it as the core-dump phenomenon, "...wherein information once force fed into the system is released following completion of the program" (p. 891). In other words, when learning is controlled by external events such as rewards and punishments, the individual tends to maintain behaviour as long as the controlling events are present. When these controlling contexts are absent, behaviour is discontinued or given up. So, if the individual studies hard in order to avoid parental displeasure and punishment, it will not persist so long as compared to when the individual studies hard because he himself wants to learn effectively. Koestner & Zuckerman (1994) too, demonstrate that autonomous students are likely to adopt "learning" goals, while controlled students are likely to adopt "performance" goals. So, when information is acquired in an autonomy-supporting context, there are more chances that it may be processed appropriately, and may be accompanied by greater interest and personal relevance. There is, therefore, a greater probability for it to be maintained (Greenwald, 1981) and consequently, the individual will tend to recall and produce such material with greater
accuracy and efficiency in future test situations. This has also been reported by Grolnick & Ryan (1987a) who found that children's relative autonomy was related to their memory for grade-level text material.

Apart from the differences mentioned above, autonomous individuals have also been found to respond to failure in a mastery-oriented manner, while those who are impersonally oriented respond to it in a helpless fashion (Koestner & Zuckerman, 1994). The perceptions of locus of causality may moderate the influence of failure feedback on motivation, and consequently tend to influence achievement outcomes.

Self-regulation thus, is an important phenomenon in education. When learning is conducted autonomously, it tends to result in more comprehensive understanding of facts and may facilitate the emergence of creative and productive ideas. On the other hand, when learning occurs as a result of external controls or self-imposed constraints, it may result in a more rote-oriented learning, and knowledge, based on such an attitude, may soon be forgotten. So, it is extremely essential that learning be imparted by the educators, and integrated by the learner in an autonomy-supportive manner. Various researchers (e.g., Krathwohl, Bloom, & Masia, 1974; Connell & Ryan, 1984; Ryan et al., 1985) have emphasized the role of such internalization models in education.

It is evident from the above that each of the three motivational resources considered in the present investigation are reliably related to learning and learning-related variables, and thereby influence scholastic achievement. Moreover, as discussed earlier, the links of each of these motivational resources with achievement motivation have been reported in literature. Evidence exists to show the links of achievement motivation (especially intrinsic) with academic achievement. There is a general consensus that learning takes place most optimally when there is
internal motivation on behalf of the learner to engage and assimilate information (deCharms, 1976; Thomas, 1980). So, it is possible that control understanding, perceived competence, and self-regulation promote intrinsic motivation, and this, in turn, affects academic accomplishments.

While such motivation-to-achievement pathways are one way in which the results could be explained, they may also reflect achievement-to-motivation effects. Children, who are doing well in studies, are reinforced from time-to-time because their desirable behaviours lead to success in school. Thus, their accomplishments may, in fact, promote their control beliefs since they have sufficient grounds to believe that they can produce desired outcomes. Moreover, their remarkable performance may ameliorate their feelings of cognitive competence. Their accomplishments may attract the praise of others, and these in turn, may make such children feel that they are "really" competent and efficacious. Besides, their accomplishments may make them feel all the more self-confident, independent and self-sufficient, thereby promoting autonomy in their behaviour.

Nonetheless, the importance of these motivational resources in determining achievement cannot be ignored. A significant trend that was observed in the present findings was that out of all the three motivational resources, perceived competence was found to be the most important one in explaining achievement in all the eight models. These results are in line with the famous saying by Thoreau Walden (1854, cf. Scheier & Kraut, 1979):

"Public opinion is a weak tyrant compared with our own private opinion. What a man thinks of himself, that it is which determines... his fate."
ch views indicate that self-perceptions of ability play a very
le in determining academic outcomes. As the name itself is
atory, actual ability and perceived ability may differ from
r. A person may possess "actual" ability to do well in
s, but he may under-estimate his potentialities, and all this may
learning-related behaviour. For instance, such a child may
ered level of aspiration, and he may prefer to go in for tasks
ot so challenging. His feelings of adequacy and efficacy may
ered, and consequently he may not be sure of himself and his
succeed.

The other hand, another child may not possess a high level of
al capacity, but his ameliorated self-perceptions of ability may
him to go in for challenging tasks. His approach will be more
oriented, and such a child shall be more sure of himself. As a
is bound to be more independent and autonomous in his
nd action, and his chances of scholastic success shall also be
us, “ability” and “self-perceptions” of ability may differ from
r, and it is these self-perceptions that shall hold more relevance
pupil. His entire approach towards learning and its related
shall be influenced by the way in which he thinks himself to
findings of the present investigation are supported by the
-developmental models of achievement that emphasize that
ns of reality, rather than reality itself, is a stronger predictor of
ent and behaviour (Bandura, 1977b; Weiner, 1979; Nicholls,
ington, 1984). This plausibly explains the superiority of
ce over control understanding and self-regulation in
dicting academic achievement for upper elementary and secondary school children, and for girls as well as boys.

Out of the other two motivational resources, control understanding was found to be more strongly related to achievement in self-regulation for younger school children. This trend was, however, reversed for the older subjects. A possible explanation for this might be that when children are young, they must know how outcomes related to their behaviour in order to achieve success. Only if they adequately understand this behaviour-outcome contingency can they be self-regulatory in those behaviours that are leading to desirable school outcomes. So, control understanding becomes a pre-requisite for attentional behaviour to occur.

An alternate explanation could be that younger children may not have developed consistent reasons for regulating their academic behaviour. Moreover, they may achieve for various reasons, even ones that are non-autonomous. But as they grow older, they begin to understand the behaviour-outcome linkage. As a consequence, both intelligent and not so brilliant children might exhibit comparable levels of control understanding, yet, the two may differ from each other as far as their beliefs of self-regulation are concerned. Self-regulation would determine the extent to which action emanates from their core sense of self. So, whether or not children are self-determined and autonomous in their learning and behaviour would be a more relevant issue when they grow up.

Apart from this, in the Indian cultural context, it is especially served that young children are usually "spoon-fed" by teachers and parents as far as their studies are concerned. As the child progresses into her classes, this "spoon-feeding" tends to decrease. So, it is possible
that the Indian educational set-up is such that it does not encourage independent decision-making and self-reliant behaviour until children enter the secondary school. Moreover, when they grow up, the studies involved are of higher level, and parents are not in a position to spoon-feed them. Consequently, older children are supposed to fend for themselves. This possibly explains as to why self-regulation starts holding more relevance when Indian children are older as compared to when they were small.

Inspite of these differences in hierarchy that have emerged as far as the motivational variables are concerned, the importance of each one of these resources cannot be overlooked since each seemed to be reasonably linked to achievement.

Moreover, it has been discussed earlier as to how intelligence was related to these motivational qualities. Hence, the hypothesized mediational link among intelligence, motivation and achievement was supported by the findings of the present investigation, with intelligence influencing each of the three motivational resources, and these, in turn, affecting academic achievement. Thus, the findings of the present study suggest that self-schemas may be utilized to bridge the impact of motivational and cognitive variables in learning, and that learning can be regulated not only by the use of cognitive strategies, but also by motivational strategies.

The present findings also revealed that parents' involvement, in one or the other way, affected the motivational resources of children, although this was evident only for some forms of involvement and for some of the motivational resources. The relationships also varied with respect to the parents' gender, child's gender and age. Each of the motivational resources, in turn, was found to be, by and large, related to
academic achievement. Hence, the mediational links amongst the variables of parents' involvement, children's motivation and academic achievement were partially supported by the present findings, with parents' involvement influencing one or the other children's motivational resources, and these in turn, influencing scholastic accomplishments.

While intelligence was found to influence each of the motivational resources, by and large, the links of parental indices of involvement with children's motivation were not so consistent. Nonetheless, the substantial path coefficients obtained in the present investigation lend support to the mediational model, thereby leading one to conclude that different aspects of parental involvement affect the motivational qualities of children, just as intelligence does. In fact, there were instances where parental involvement variables exerted a stronger influence on motivational resources as compared to intelligence. This further justifies the inclusion of parental involvement variables in the present study.

In sum, it may be said that the mediational models obtained in the present context demonstrated a possible way in which the variables of interest were related to each other, with intelligence and parental involvement variables exerting influence on academic achievement directly and/or indirectly by means of influencing the motivational resources of control understanding, perceived competence, and self-regulation.