A Coherent Framework for the Application of Psychology in Schools

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ABSTRACT *A coherent and integrated theoretical model for the application of psychology in schools will serve two major purposes. Firstly, it will allow practitioner educational psychologists (EPs) to represent the extent of the work they carry out with schools to research-based psychologist colleagues. This in turn could reveal the rich research agenda that awaits creative combinations of practitioner experience and academic research skills. Secondly, a coherent framework will allow all those seeking to apply or draw on psychology when working in schools to explicate that psychology in order to promote a productive dialogue with professional colleagues, be they teachers, researchers or other psychologists. The framework proposed in this article draws mainly on practitioner-directed research within educational and organisational psychology, supplemented by related university-based research. In particular, the model highlights the need for those who seek to apply psychology in schools, to appreciate the relationships between both the formal and informal aspects of school staff, pupil, and family subsystems, and the ways in which different interventions impact upon different areas of this psycho-social framework.*

Introduction

Professional educational psychologists (EPs) are concerned with making the benefits of psychology available to children and young people, teachers and parents. So run most introductions to the profession of educational psychology. Implicit in the statement is the primacy of application. For the most positive and successful outcomes, apply the findings from psychological research rigorously. For best results, apply paint evenly.

The correctness of these statements seems unquestionable, and yet any practising EP will, along with the conscientious do-it-yourself enthusiast, confirm that application is all. No matter how exact the theory and technology that devised and tested out the paint or the psychological knowledge, it is in the interaction with this uneven, perhaps unreceptive surface, or with this stressed teacher, demoralised parent, disharmonious school or angry child, that the true tests of application and *applicability* are carried out.

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The relationship between the main body of university-based research psychologists and EPs has not always been a productive one. For while the chain of transmission from 'pure', to 'applied' research and on into application has provided powerful technologies with their origins in the physical and biological sciences, it has made much less of a contribution to crucial areas within educational and social policy (Tizard, 1990). Instead, the research on which practitioner EPs draw most heavily has, in the main, been carried out by practitioners themselves, often in the form of action research or illuminative case studies.

While these have the advantage of being located close to professional practice (Gray, 1991), applications change with changing circumstances and a coherent theoretical framework is required to underpin successful adaptations to practice. Also, without such a framework, the arena for a mutually beneficial dialogue between EPs, research psychologists and teachers is likely to remain elusive.

As a profession, educational psychology has often been characterised as on the horns of one dilemma or another, the particular issue of contention shifting over time:

- to be clinic-based or school-based?
- to embrace or eschew norm-referenced psychometric measures?
- to work with individual children or with school systems?
- preventative or merely reactive work?
- to engage primarily in statutory work or other duties?
- to support special schooling or an inclusive mainstream system?

Whilst some of these dilemmas are fuelled by changes within educational legislation and policy, and by wider social changes, it is a central contention of this paper that these dilemmas and the lack of dialogue between academic researchers, EPs and teachers derives in part from the lack of a coherent theoretical framework. With a plausible and explicit statement of the relationship between the major components of theory and practice, however, a framework for a more confident and directed application of psychology in schools would exist, bringing with it a clear and exciting set of research questions.

In order to develop such a framework, it is necessary to outline briefly key trends in professional educational psychology and to assert a more coherent, *post hoc, field derived* theoretical rationale for the effective application of educational psychology.

The Traditional Practices of Educational Psychologists

Many of the earliest EPs had their employment bases within child guidance clinics, where they were most likely to carry out various forms of assessment of referred children. Assessments were concerned with extending knowledge of various 'segments' of the child, almost always cognitive skills (including IQ), usually academic attainments, and sometimes personality and affective aspects. Psychometric testing was, of course, the major assessment tool employed and the debate about the prominence of these instruments has absorbed a considerable proportion of the energies of a generation of EPs.

However, a more radical challenge to established practice came in the form of moves to shift the emphasis away from the assessment of individuals, by whatever means, and to employ different areas of psychology in a more preventative rather than reactive fashion, and to the benefit of a larger number of school pupils and the adults responsible for their care and education. Despite the requirements of legislation and the cutting back in recent years of many public sector services, including EPs, to 'core functions', the desire to develop the profession in these directions remains widely shared.

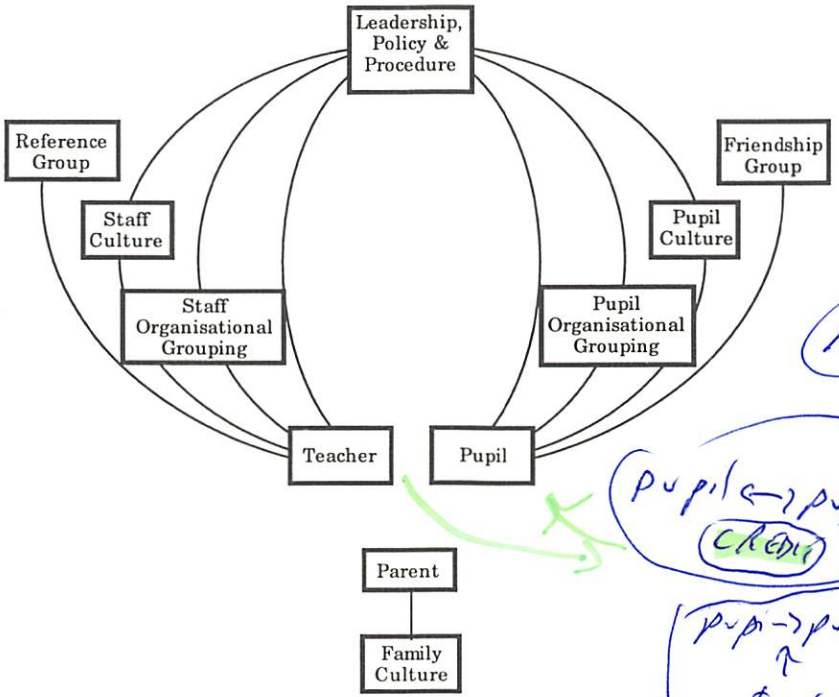

FIG. 1. A coherent framework for the application of psychology in schools.

Towards a Coherent Model of Practice

In order to demonstrate the relationship between what we consider to be the essential components of a coherent and integrated model, this article will put forward a schematic framework and then justify the subsystems, and their inter relationship, by reference to the supporting research and professional literature.

At the centre of this model is the pupil, the traditional focus of the EP profession. Advances over the past 20 years or so in applied educational psychology, as well as in wider educational research and practice, have focused on various of the elements of the proposed model. However, despite all the professional advances, legislators and the employers of educational psychologists, and indeed specialist teachers, have remained fixated with the view that individual children, and the assessment of their various difficulties, are at the heart of professional practice. Consequently, this article argues that a coherent theoretical framework is required to unite these social and organisational forces, to avoid their being construed by a wider audience as merely decorative or disconnected peripherals (see Fig. 1).

The Individual Pupil

Represented schematically, the 'pupil' box includes skills, knowledge, emotional and social behaviour—the dominant concerns of the profession before the 'reconstruction' movement of the late 1970s. Traditionally, skills, attainments and other characteristics of pupils have been intercorrelated or factor analysed in an attempt to explain and predict aspects of school performance. Volumes of research attest to the power of this paradigm

to capture the attention of psychologists. However, as the model being proposed here is concerned with the psychological components of the wider context within which pupils operate, this traditional perspective will not be pursued further.

The Individual Teacher

Although less researched, studies of teacher characteristics, especially teaching style, division of attention between pupils, and attributions for pupil difficulties, bring a symmetry to the model. Furthermore, studies of interactions between pupil and teacher characteristics introduce a necessary dynamic and interactionist perspective. In the context of assessment, for example, the growing interest amongst EPs in dynamic assessment (Daniels, 1992; Elliot *et al.* 1997) illustrates clearly the shift from a pupil-focused, to an interactionist perspective. It is the contention of this article that *the primary focus of research and practice in educational psychology should be on maximising the quality and effectiveness of the interactions between teachers and pupils*, as many teachers and pupils as possible, and not on individual pupils construed as 'medical model' 'referrals'.

Policy and Procedure—hard systems methodology

As a result of the challenges made to casework approaches within educational psychology, a number of opinion formers within the EP profession began to explore other service delivery options. Burden undertook various projects in schools with educational psychologists in training—helping primary school teachers to develop diagnostic procedures for children with reading difficulties, developing the pastoral care system in a comprehensive school, and helping another such school set up provision for pupils with special educational needs (Burden, 1978). His search for an underlying rationale to link together interventions such as these led him to General Systems Theory and to the Context–Input–Process–Product evaluation guidelines developed by Stufflebeam (1968).

In the model proposed in this article, much of this work was concerned with making interventions with schools and teachers in the formal and explicit areas of policy and procedures.

Closely related to systems approaches was the drive for EPs to become involved with the training of teachers. By the early 1980s, in-service provision by EPs for teachers was flourishing, in the belief that such approaches would reach more teachers and equip them to act early and to prevent the escalation of similar difficulties in the future.

Staff Culture

Despite the proliferation of training activities, Aubrey (1987) warned that 'however successful an in-service programme is in changing individual skills, the institution in which the teacher operates has its own norms, role expectations and relationships which form natural barriers to innovative efforts'. This observation echoed that made by one of the earliest proponents of behavioural approaches in schools. Leach (1981), reflecting on the lack of take-up of these approaches among teachers, argued that EPs had 'neglected to face the fact that we are dealing with slow-changing permanent systems … We have, therefore, not considered the need for developing system-change skills as vital extras to basic intervention expertise'.

Another dimension to this phenomenon of 'slow-changing permanent systems' was

revealed in a recent grounded theory study of primary school teachers who had been the recipients of successful consultations with EPs (Miller, 1996). These interventions employed behavioural approaches, to reduce the difficult classroom behaviour of a selected pupil. Prior to the interventions, these pupils had school-wide notoriety because of their behaviour. Although other staff within the 23 schools usually recognised subsequent improvements, there was a marked lack of interest on their part in the possible reasons for this in almost every school. Furthermore, the teachers actually involved in this successful practice were equally reticent about sharing their experience—and the potentially beneficial strategies—with their colleagues. The study subsequently explored aspects of teacher attributions and the psycho-social system boundaries between school and home to account for this 'cultural' resistance to the adoption of potentially successful practice with difficult pupil behaviour.

Other studies and reflections have led to increased interest in working with school cultures, defined by Dalin (1993) as 'what we experience as the "ways things are" in an organisation, the written and unwritten rules that regulate behaviour, the stories and the "myths" of what an organisation has achieved, the standards and the values set for its members'. (Lest the discussion here of staff cultures within schools appear overly critical or judgemental, it should be remembered that EPs and university-based researchers are equally guided by their own organisations' unwritten rules, perceptions and beliefs.)

Soft systems methodology, developed by Checkland (1981) across organisational contexts ranging from multinational companies to area health authorities, has been promoted amongst EPs primarily as a result of the efforts of Frederickson (1990). Unlike hard systems methodologies, which primarily address policy and procedures directly and staff culture more tangentially, soft systems methodology gives equal weight to both aspects of the organisation, recognising the need to begin work with an organisation at the level of its unwritten rules, stories, myths and conflicts (see Fig. 2).

Similarly, research by Cox *et al.* (1989), primarily across schools, has developed a

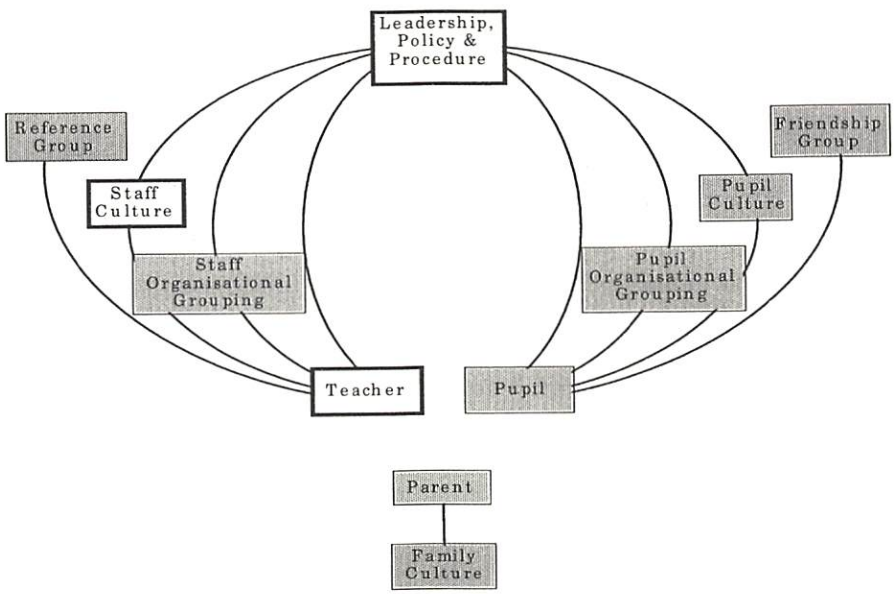

FIG. 2. The psycho-social context of soft systems methodology.

model of 'organisational healthiness' which includes measures of collective staff perceptions of the *task, development* and *problem-solving* environments within organisations. Work in inner-city primary schools has demonstrated that workshops examining 'organisational healthiness' are able to raise not only perceptions of the effectiveness of these three environments, but also improve teachers' individual well-being and reduce their stress levels, compared to staff in a control primary school (Cox *et al.*, 1993). Such techniques enable EPs to work with staff perceptions and culture as a facilitator of, rather than barrier to organisational change.

Reference Group

Another trend in professional practice has utilised group work for teachers. Hanko (1995) has drawn on Caplan's (1970) mental health consultation in providing sensitive accounts of groups she has run for teachers, in which it has been possible for them, through discussion of real-life cases, to acknowledge and legitimise their sometimes strong feelings and help each other with possible ways forward. Osborne (1983) has also provided group sessions for teachers to address feelings aroused by the challenge of demanding pupil behaviour, drawing explicitly upon a background in psychodynamic theory. Once again, Stringer *et al.* (1992) describe a project in which a group of EPs employed techniques deriving from the Milan school of family therapy for use with whole-school or self-selecting groups of staff.

Where such work is carried out with all staff of a particular school, opportunities exist to influence aspects of the culture. Because the approaches emphasise the strong emotions aroused by some professionally challenging pupils, they have the potential to move a staff group towards operating as a special 'reference group' (Nias, 1985). Where group composition draws from many schools, and teachers are therefore less influenced by specific organisational cultures, then the conditions are clearly set for the establishment of a professional reference group. Although this latter condition does not help move the practice of a whole school, it possesses the potential to support a teacher in work with a particularly demanding pupil (see Fig. 3).

Staff Organisational Grouping—the 'room management' studies

EPs have long been closely involved with strategic and individual allocation of resources to pupils identified as having special educational needs (SEN), an association seen by many as restricting developments in the areas of activity described in this article.

A major concern in work with pupils with SEN surrounds the allocation of additional teaching or non-teaching personnel to specific pupils, implicating EPs heavily in the assessment of the 'resource-worthiness' of certain individuals. A small but important research base in what have become known as 'room management' studies, has the potential to move such decisions beyond their current politically-charged context and towards a more considered position.

McBrien & Weightman (1980) observed that, in a special school for pupils with severe learning difficulties, the injection of extra assistants into a class did not increase the measured engagement of pupils on an educational task. This engagement remained at around 30% whether the number of staff in the class was 1, 2, 3, 4, 5 or 6! Training staff in room management, however, in carrying out one from a set of three clear roles, led to an almost doubled rate of pupil engagement.

Thomas (1992) replicated this study with a more sophisticated methodology in a

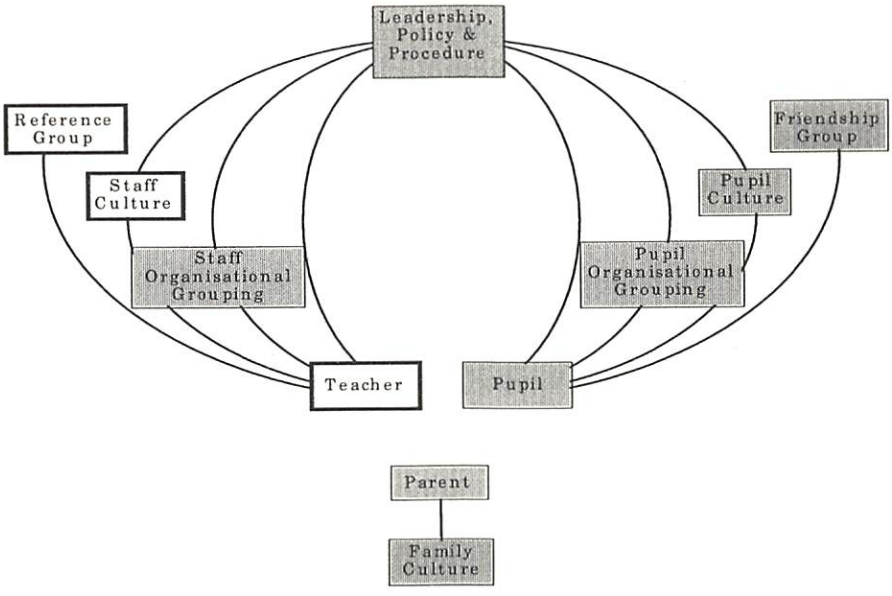

FIG. 3. The psycho-social context of teacher support/reference group work.

mainstream primary classroom and was able to show highly significant differences in pupil 'on-task behaviour' resulting from training the classroom team of teacher and parents in room management. Thomas also found that various interpersonal processes, often maintained by school procedures and staff cultures, mitigated against an effective evolution of these types of role differentiation.

Room management studies hence demonstrate that this form of training in explicit staff organisational grouping can improve the quality of teacher–pupil interactions, and extensions of this work could marry significantly the interests of professional and research psychologists.

Pupil Organisational Grouping—peers as tutors

Recent EP practice has highlighted and sought to harness peer support to enhance the learning of pupils from each other, in particular, in those circumstance when one member of an instructional dyad is experiencing learning difficulties. Of all the sections of the proposed model, this is the area in which EP activity and academic research have most effectively converged.

The paired reading technique, for instance, was originally developed within a child guidance clinic to be used by psychologists (Morgan, 1976). Because the technique proved to be robust, it became an effective method whereby parents under professional guidance were able to achieve improvements in the reading ability of their children with serious literacy problems (Morgan & Lyon, 1979). EPs attempted to replicate larger scale studies using children's schools as the instructional base for the parent and child pairs (Bushell *et al.*, 1982). These early studies illustrated that the technique was easier to disseminate to parents rather than teachers. Work with the former did not require school-level changes of policy towards the education of pupils with literacy difficulties—

techniques which challenge traditional role prescriptions have the potential to antagonise both the formal and informal aspects, the policy and staff culture, of schools.

Recent work by psychologists and other education professionals has promoted these and related innovations to the extent that schemes for involving parents with pupils' reading are, in this relatively short time, often a standard feature of school organisation. In addition, Topping extended paired reading into schools by encouraging the tutoring of pupils by other pupils, in both same- and cross-age pairs.

The final development has been to move beyond the one particular tutoring technique and to broaden dramatically peer tutoring into a range of curriculum areas such as spelling, handwriting, mathematics and science (Topping, 1996). It is at this point that the professional practices of EPs have converged with the interests of research psychologists (e.g. Wood & O'Malley, 1996).

Pupil Culture

In addition to instructional techniques, research psychologists and professional practitioners have formed effective partnerships in tackling bullying in schools (Smith & Sharp, 1994). Once again early interest in this topic was stimulated by the work of a practising EP (Besag, 1989). The accumulation of research and casework experience has once more led to policy change within schools in respect of bullying and pupil safety, whilst at the same time the staff culture in some schools has had to adjust to the nature and extent of previously unrecognised pupil behaviour.

Whilst school-level changes have been made by staff, the subject of bullying also introduces the last major section of the model proposed in this article—that of the pupil culture. Although bullying can be seen as, among other things, a manifestation of abusive elements within the peer culture, it is also among the peer group that some of the most effective remedies may be found. Sharp (1996), for example, has described a variety of peer-centred intervention strategies which have been shown to lead to large reductions in levels of bullying behaviour and increases in the number of pupils willing to tell teachers if they are being bullied (see Fig. 4).

Another intervention strategy which operates by harnessing the peer culture, and by helping build friendship groups, is the Circle of Friends technique (Forrest *et al.*, 1996). Although evaluation is presently only at the level of casework reports, highly impressive results have been obtained. In Britain, Newton *et al.* (1996) have described the setting up of 20 Circles of Friends for pupils aged between 4 and 14, primarily pupils with severe emotional and behavioural difficulties. Where other approaches had been tried and failed, Newton *et al.* managed to prevent permanent exclusions from school and to avoid segregation into special education. The process facilitates the active participation of the peer group in supporting the focal pupil in the search for realistic—and often highly unconventional—solutions to the inevitable problems faced by any child who is rejected or alienated within the school culture.

As with the proven track record of peer tuition approaches, the Circle of Friends technique is beginning to reveal the powerful role of peer cultures to support and include socially isolated pupils, including those with the most serious forms of anti-social behaviour. Certainly, the levels of empathy and social problem-solving witnessed in young people as a result of this technique has surpassed anything the authors have previously encountered in over 60 years' work between them as teachers and EPs.

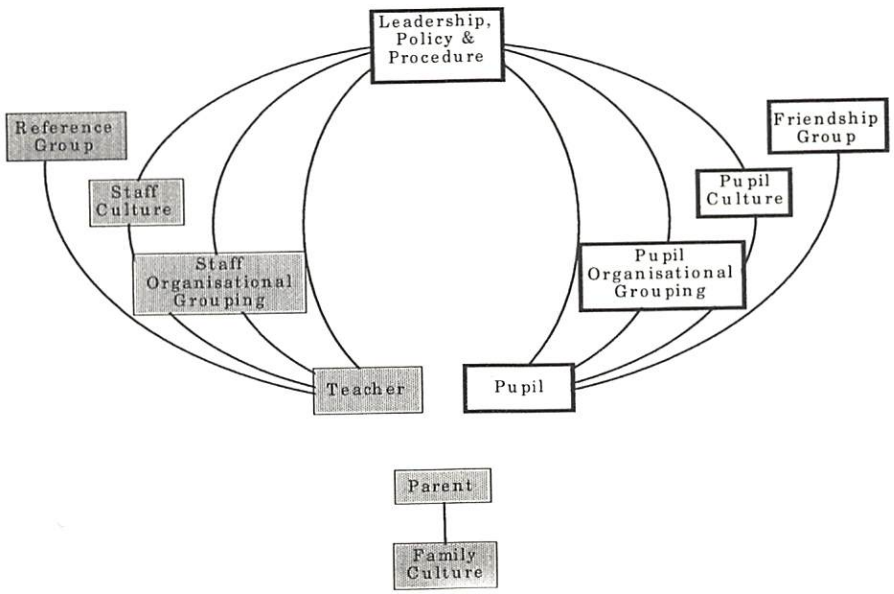

FIG. 4. The psycho-social context of anti-bullying and peer support initiatives.

Teachers and Parents—consulting to 'joint systems'

Although positive partnerships between parents and schools are universally acknowledged as a prerequisite for effective educational practice, and examples of good practice abound, it can be the case that, where pupils have significant special needs, then home–school relationships deteriorate. The Elton Report (Department & Education and Science, 1989), for example, arising from a national enquiry into 'discipline in schools', commented that 'Our evidence suggests that teachers' picture of parents is generally very negative. Many teachers feel that parents are to blame for much mis-behaviour in school. We consider that, while this picture contains an element of truth, it is distorted' (p. 93).

An important contribution to resolving the impasse between parents and teachers which can easily arise in such circumstances was provided by the 'joint systems' work described by Dowling & Osborne (1994). By combining thinking and practice deriving from family therapy with the systems work already developed within educational psychology, these psychologists derived sets of procedures for undertaking effective work jointly with parents and teachers in respect of pupils' difficult behaviour. A recent study of the practice of British EPs (Miller, 1996) has shown that joint consultations such as these are being successfully employed in primary schools and can produce dramatic improvements in the behaviour of pupils often judged by teachers as severely challenging. From the perspective of our model, a significant consequence has been demonstrated by teachers dissociating themselves from the identities of parents constructed within some staff cultures.

Intervening within the Coherent Framework—the application of 'inclusive tools'

In addition to the Circle of Friends technique described above, Forrest *et al.* (1996) have

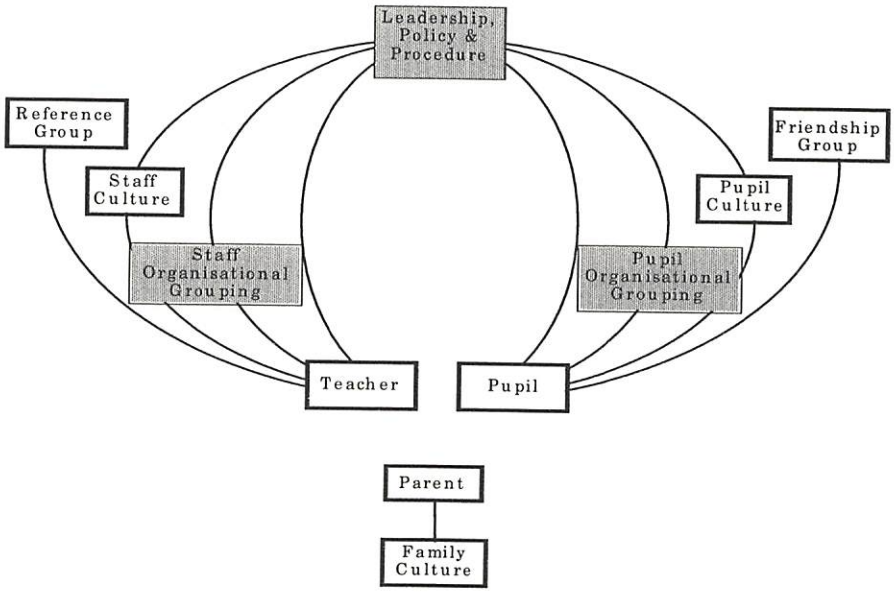

FIG. 5. The psycho-social context of inclusive tools such as MAP and PATH.

developed and pioneered the use of other action planning techniques. The rationale for these approaches, particularly MAP (Making Action Plans) and PATH (Planning Alternative Tomorrows With Hope), lies within the drive for a mainstream education system which includes all pupils, whatever their level of special needs or disability. One central aim of these planning techniques is to engage with the fundamental hopes and fears of the young people involved and their parents, thus energising commitment to an extent seldom encountered within more formal contexts. Of direct relevance to the model of application propounded in this article, is the unique way in which MAP and PATH bring together into the planning, pupils with special needs, their teachers, family members and, often, friends and classmates of the 'target' pupil (see Fig. 5).

Conclusion

This article has offered a coherent framework for applying psychology in schools. The practice and research base from which the model derives emphasises the importance of both formal (public) and informal (hidden) processes and demonstrates the relationships between these aspects of staff, pupil and family subsystems.

In particular, this article has argued that in approaches such as Circles of Friends, MAP and PATH, it is possible to witness a combination and conjunction of interests within the formal and informal school staff, family and peer subsystems. It is the contention of the article that the more often the collaborations between teachers and EPs can approach this type of format, and break down the barriers between these subsystems, then the more likely are interventions with significant and lasting effects for pupils.

The various initiatives outlined in this article have demonstrated proven, powerful effects in such areas as reducing bullying and exclusion from school, and improving literacy, pupil cooperation and participation, parental involvement, staff teaming and

teacher morale. Integrated within the proposed model, these impressive applications of psychology constitute a powerful definition of school improvement.

Practising EPs have been regularly contributing to the school improvement literature for the last quarter of a century, as a perusal of the two major practice-based journals—*Educational Educational Psychology in Practice* and *Educational and Child Psychology*—will reveal. However, the locations of these publications and the traditional identification of EPs with SEN and child psychology, have served for too long to mask the common interests of EPs, teachers and certain academic researchers.

Commenting upon the moribund state of current school effectiveness research, and the absence of a research base to inform school improvement strategies, Hopkins (1996) has highlighted the need to develop and evaluate models of how schools function. The framework proposed in this article derives primarily from within EP practice, from work carried out in schools on a daily basis, face to face with protagonists in the most complex and seemingly intractable problems. It is grounded in successful collaborations between EPs, teachers, pupils and parents, and unites the significant, interrelated psycho-social subsystems of a school. Hard cases may make bad laws, but school-based casework, systems work and training focused upon the most challenging pupils in schools, have certainly provided the acid test. It is the central argument of this article that, deriving as it does from successful collaborations in schools, the coherent framework possesses high validity and provides clear lessons for school managers, local education authorities and legislators; in fact, all concerned with bringing about school improvement.

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Season of birth and gender effects in children attending moderate learning difficulty schools

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This paper examines the effects of season of birth and gender on academic achievement and cognitive abilities in children attending moderate learning difficulty schools. Given the high preponderance of both boys and children born in summer attending special schools it is important to consider how well these children perform in relation to their peers. A multivariate analysis reveals that both boys and summer born children perform better on tests of intelligence, mathematical ability, and reading comprehension. Summer born children also perform better on a test of communication skills. Discriminant functions analysis reveals that for both gender and season of birth IQ is the major predictor variable followed by reading comprehension, mathematical ability and communication skill. For gender, IQ discriminates more successfully than the other variables, whereas with season of birth the relative sizes of the effects are more comparable. The results of the analysis are discussed in terms of the implications for the identification of children for placement in moderate learning difficulty schools.

The existence of season of birth effects is well recognised. Children born in the summer months have scored lower on standardised achievement tests (Pidgeon & Dodds, 1961) and appeared disproportionately in the lower streams of junior schools (Jinks, 1964). France & Wiseman (1966) found that summer born primary school children scored lower on their standardised tests of an educational programme. John (1962) found a larger proportion than expected of summer born children who could be classified as 'slow' readers. Both Williams (1964) and Bookbinder (1967) found a higher than expected incidence of summer born children in schools for children with learning difficulties. Pumfrey (1975), in an extensive analysis of 23 schools for children with learning difficulties, found that at three age levels (7–8 yrs, 10–11 yrs, 14–15 yrs) there was a marked over-representation of summer born children. These reports all demonstrate the detrimental effect of season of birth on the academic attainment of children born in summer.

On the other hand, a number of papers have failed to identify season of birth effects. Armstrong (1965) found no season of birth effects on grades in the 11+ exam for entrance to grammar schools and no differences in the performance of older children in the O-level examinations. However, Armstrong's failure to find these effects could be due to a selection

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bias. Only those children at the higher end of the scale of academic achievement were likely to be entered for either the 11+ or O-level examinations. Ojha, Kelvin & Lucas (1966) found no evidence of season of birth effects in entrance to universities. As well as a possible sampling bias, this may simply reflect the differences in distributions of abilities in summer born compared with children born at other times. It is not that summer born children necessarily lag behind their counterparts but if they do lag behind they tend to do so more disastrously. Williams, Davies, Evans & Ferguson (1970) found no evidence of season of birth effects in preschool children on a wide range of developmental tests that measured language development, non-verbal ability, and perceptual and motor skills. However, there are difficulties in extrapolating from the preschool age group due to the instability of the psychometric measures taken at that age. Indeed, it is not until approximately six years of age that measures such as IQ become reliable.

Summer born children tend to be poorer academic achievers in the mainstream school setting. The question that needs answering is why do they attend schools for children with learning difficulties in disproportionate numbers? Pumfrey (1975) argued that teachers' low expectations via their detrimental effects on the children's performance are at least partially responsible for the lower attainment of summer born children. These expectations are likely to be based on the child's behaviour as much their ability. Williams (1964) in a study of children with learning difficulties argued that whilst there is no essential connection between poor academic achievement and behavioural or emotional problems they do tend to co-occur. It is perhaps this aspect of the summer born child which leads to their over-representation in schools for children with learning difficulties. A recent paper by Mortimore, Sammons, Lewis & Ecob (1988), in a longitudinal study of junior school pupils, demonstrated season of birth effects with summer born children tending to show more behavioural problems than their classroom peers. Carroll (1992) has found that the school attendance of summer born children is lower than other children. At the same time other researchers (e.g., Farrington, 1980) have shown that teachers believe that pupils with poor attendance records also have behaviour problems.

These observations suggest that at least one of the reasons that summer born children are more frequently sent to schools for children with learning difficulties is their behavioural situation. The academic ability of a child who is behaviourally disruptive is more likely to come to the attention of the teacher (the primary source of referral to the assessment procedure) than a child who may have similar academic difficulties but who is relatively well behaved. Summer born children often have behavioural difficulties so these children are more likely to be referred for assessment and subsequent placement in a school for learning difficulties.

Drabman, Tarnowski & Kelly (1987) found that boys are typically referred more often to schools for children with academic and behaviour problems. Approximately twice as many boys as girls were referred. They argued that since all the referrals were from teachers it seems likely that teacher bias, based on problematic behaviour, is in operation. In a follow-up study, Tarnowski, Anderson, Drabman & Kelly (1990) argued that the differences in cognitive developmental competencies were not being used as the basis for referral, supporting their contention that teacher bias is in effect. Eme (1979) and Kelly, Bullock & Dykes (1977) have shown that teachers believe that boys have more serious behavioural and emotional problems than girls.

Vogel (1990),[1] in a review of the literature on gender effects in children with learning difficulties, argued that girls with learning difficulties are not identified as frequently as

boys. When they are identified, they have lower IQ scores and have more severe difficulties than their male counterparts. She argues that these effects are probably due to sample bias. In other words, the identification of children with learning difficulties is biased toward males. Anastas & Reinherz (1984) presented evidence from a longitudinal study that boys received a higher proportion of support for behavioural and emotional problems than girls. They also showed that girls who received this kind of psychological support were less likely to receive additional support for any learning difficulties. The pattern they observed replicated previous studies by Eme (1979) and Gould, Wunsch-Hitzig & Dohrenwend (1981). Mirkin (1982; cited by Vogel, 1990) examined two systems of referral, the first based on teachers' judgments alone, the second including measures of literacy skills, and found that relatively more males were referred under the first system than the second system. Mirkin concluded that teacher referral was biased by the behaviour of the children with more males demonstrating disruptive behaviours.

Girls are disadvantaged by the present system to the extent that they are not being identified as requiring special educational support as often as boys. Very often this is because the boys are being identified on the basis of their behavioural and emotional difficulties and not their academic or cognitive abilities. Both the incidence and the recognition of behavioural problems in boys is greater than girls. It seems likely then that the girls will need to be much more seriously disadvantaged in their learning than the boys before they are recognised as requiring additional support or referral to a school for children with learning difficulties.

By combining the two different threads to this paper it is possible to come to some relatively counter-intuitive predictions. First, as we have already argued, summer born children in MLD schools are likely to be academically better performers than their non-summer born counterparts. Measures of academic achievement and cognitive abilities are likely to show that within a school for children with moderate learning difficulties the summer born children are relatively higher achievers.

At the same time, we have argued that boys are likely to be more disruptive in the classroom than girls. Following a similar argument to the above we believe that this will mean that boys with learning difficulties will be more easily identified and thus more likely to attend an MLD school than girls. They will also, in general, be identified more frequently with higher abilities than girls. We predict that boys will generally score higher on tests of academic achievement and cognitive ability.

It is quite possible that the effects of season of birth and gender are additive. This would lead to an interaction between these factors. The combination of female and non-summer born may reduce even further the likelihood of identification of learning difficulties, further depressing the scores we would expect on measures of attainment and ability. At the same time the combination of male and summer born could exacerbate the identification of learning difficulties leading to the expectation of relatively higher scores on tests.

If there were no selection biases in operation for referring children to schools for children with learning difficulties then we would expect the abilities of both boys and girls to be the same and both summer born and non-summer born children to be the same. Indeed, if there is an effect of being summer born, due to having less time in the mainstream school system, then previous research suggests that the summer born children will be lower achievers than their non-summer born peers.

Method

Sample

A total of 87 children, 60 males and 27 females (mean age 13.9 years, SD 1.35, range 11.5–15.4 years) completed a battery of tests. These included an intelligence test, assessments of their reading and a communication skills task. The children came from two Nottingham schools catering for children with moderate learning difficulties and all spoke English as their first language. A total of 16 children were discharged from the present study for a variety of reasons. Eight (five males and three females) children failed to achieve a score on both the reading comprehension and reading accuracy tests. Two children (both males) achieved a reading accuracy score but failed to obtain a reading comprehension score. Six children (four males and two females) achieved a reading comprehension score but failed to achieve a reading accuracy score.

Measures

Intelligence. An abbreviated version of the Wechsler Intelligence Scale for Children, Revised (WISC-R; Wechsler, 1974) was administered according to the WISC-R manual. The reliability measures for the WISC-R are: verbal scale, r=.94; performance scale, r=.90; and full scale, r=.96. This version consists of two verbal subtests: Information and Comprehension and three performance subtests: Picture Arrangement, Block Design and Coding (Kennedy & Elder, 1982).

Mathematical ability. The measure of mathematical ability adopted here is a subscale of the Wechsler Intelligence Scale for Children, Revised (WISC-R; Wechsler, 1974; reliability, r=.77).

Reading ability. This was assessed using the Individual Reading Analysis and the New Reading Analysis (Vincent & de la Mare, 1985*a*, 1985*b*). This measure is divided into a component for reading accuracy (reliability, r=.96) and a separate component for reading comprehension (reliability, r=.83). The test was administered according to the criteria in the assessment manual with the exception of the comprehension measure which was adapted to suit the particular needs of this group of children.

Communication skill. Communication skill was assessed using a task taken from Concept Seven-Nine (Schools Council, 1972). This task is able to provide a general picture of children's ability to use spoken language to transfer information and to give and follow instructions. Pairs of subjects sit facing each other across a table divided by a low screen preventing them seeing each other's material. Both subjects have a similar booklet containing five diagrams of increasing complexity, drawing paper and a red and blue pen. The children take it in turns to describe the first diagram in their booklet for their partner to draw. When the instruction follower (IF) thinks that they have completed the diagram, they pass it over the screen to the information giver (IG). The IG compares this diagram with the original and reconstructs the description if the match is not acceptable. This continues until the experimenter and the IG agree to accept the IF's diagram. The children then swap roles. Both children are encouraged to ask each other questions.

The activity continued in this way until both subjects had described and drawn five diagrams. As long as the children were still able to concentrate and succeed at the task the experimenter gave both children another booklet each with more complex diagrams and the procedure started again. The activity continued until either the experimenter thought that the tasks were getting too hard, and the children were beginning to struggle to concentrate,

or the final pair of booklets (booklets 9 and 10) had been completed. The experimenter intervened where necessary to keep the children on task. The performance of each pair of children was video-taped. The highest level of complexity reached (as indicated by the book number) was taken as a measure of communication skill.

Results

Since there is such a large proportion of children missing from the initial sample it was decided to test if there were any significant differences between gender and season of birth in terms of frequency for the discharged group. No significant differences were found. The following analyses only include the 71 children who completed the full battery of tests.

Looking at the numbers of males and females there is no significant difference although it is tending in the direction of more males than females (χ^2=5.09, d.f.=1, p>0.07). There are significantly more summer born children in this sample than non-summer born (χ^2=14.90, d.f.=1, p<0.001). Table 1 reports the means (standard deviations) of the biographic and academic achievement variables.

Table 1. Summary of ages and scores on the test battery (standard deviations in parentheses)

Gender	Season of Birth	*N*	Age	IQ	Maths	Reading Accuracy	Reading Comprehension	Communication Skill
Female	Not Summer	10	13.77 (1.35)	52.90 (7.23)	2.20 (1.13)	7.35 (0.97)	7.68 (0.78)	6.40 (2.11)
	Summer	16	13.79 (1.02)	63.18 (9.21)	3.87 (2.12)	7.82 (1.17)	8.19 (0.85)	7.25 (1.16)
Male	Not Summer	22	13.96 (1.47)	62.77 (8.55)	3.36 (1.78)	7.08 (1.38)	8.01 (0.79)	6.68 (1.72)
	Summer	23	13.95 (1.28)	72.04 (10.01)	4.60 (2.14)	7.68 (1.14)	8.82 (0.94)	8.39 (1.78)

A 2x2 multivariate analysis of variance was performed using gender and season of birth as the independent variables and IQ, mathematics, reading accuracy, reading comprehension and communication skills as the dependent variables and with age as a covariate.

There were multivariate effects for gender (F(5,62)=4.19, p<0.002, eta^2=0.252) and season for birth (F(5,62)=4.43, p<0.002, eta^2=0.263) but no interaction between gender and season of birth (F(5,62)=0.70, p>0.60, eta^2=0.012)

For the univariate tests on the dependent variables there were main effects of gender on IQ (F(1,66)=18.29, p<0.001, eta^2=0.217), mathematics (F(1,66)=4.36, p<0.05, eta^2=0.062) and reading comprehension (F(1,66)=4.75, p<0.05, eta^2=0.067) but no effects for either reading accuracy (F(1,66)=0.56, >0.4 eta^2=0.008) or communication skills (F(1,66)=2.40 p>0.1, eta^2=0.035).

There were also univariate main effects of season of birth on IQ ($F(1,66)=19.05$ $p<0.001$, $eta^2=0.224$), mathematics ($F(1,66)=9.38$ $p<0.003$, $eta^2=0.124$), reading comprehension ($F(1,66)=9.40$ $p<0.003$, $eta^2=0.125$) and communication skills ($F(1,66)=10.29$ $p<0.002$, $eta^2=0.135$) but no effect for reading accuracy ($F(1,66)=3.13$, $p>0.08$, $eta^2=0.045$).

The males in the study had significantly higher IQ scores, higher scores on the mathematics subscale, and higher reading comprehension scores than their female counterparts. At the same time the summer born children had significantly higher IQ scores, higher scores on the mathematics subscale, higher reading comprehension scores and higher communication skill scores than their non-summer born peers.

In order to further examine the relationships between the dependent variables and the effects of gender and season of birth two separate discriminant functions analyses were conducted. The first analysis looked at the effectiveness of IQ, mathematics, reading comprehension and communication to predict gender. The second analysis examined the usefulness of these variables in discriminating season of birth.

Table 2. Classification of actual and predicted males and females by the discriminant function

	Predicted	
	Females	Males
Females	19 (73.1%)	7 (26.9%)
Males	16 (35.6%)	29 (64.4%)

The discriminant function for IQ, mathematics, reading comprehension and communication scores on gender was significant ($\chi^2=10.63$, d.f.=4, $p<.05$). The predictions made by the discriminant function are shown in Table 2. Of the females 73.1 per cent and of the males 64.4 per cent were successfully identified by the discriminant function.

The standardised correlations between the discriminant function and the variables indicate the degree to which a variable contributes to the discriminant function. IQ has the highest correlation with the discriminant function ($r=.96$) followed by reading comprehension ($r=.56$) and mathematics ($r=.49$) and communication skills ($r=.40$).

The discriminant function for IQ, mathematics, reading comprehension and communication scores on season of birth was significant ($\chi^2=16.59$, d.f.=4, $p<.003$). The predictions made by the discriminant function are shown in Table 3. Seventy-five per cent of the non-summer born and 71.8 per cent of the summer born were successfully identified by the discriminant function.

The standardised correlations indicate that IQ has the highest correlation with the discriminant function ($r=.83$) followed by reading comprehension ($r=.72$) and mathematics ($r=.70$). Communication skills has the lowest correlation ($r=.64$).

Table 3. Classification of actual and predicted summer born and non-summer born by the discriminant function

	Predicted	
	Non-summer born	Summer born
Non-summer born	24 (75.0%)	8 (25.0%)
Summer born	11 (28.2%)	28 (71.8%)

Discussion

There are some striking similarities between the effects of gender and season of birth on the performance of children with moderate learning difficulties. Gender effects are found for IQ, mathematics and reading comprehension with boys outperforming the girls on all these tests. At the same time, season of birth effects are found for IQ, mathematics, reading comprehension and communication skills with the summer born scoring higher than the non-summer born children. For all the dependent variables except reading accuracy, the female non-summer born children provide the lowest scores and the male summer born children provide the highest scores.

This pattern of results is highlighted even more if we consider the importance of each dependent variable in discriminating gender or season of birth. In the case of gender, IQ is the most important discriminator with reading comprehension, mathematical ability and communication skills following some way behind. Exactly the same order of importance is repeated when we consider season of birth effects. The major difference between gender and season of birth is found in the relative size of the contributions that the discriminating variables make. For gender the correlation of IQ with the discriminant function is surprisingly large and almost twice the size of the next highest discriminating variable. In the case of season of birth there is only a small difference between the correlations.

The results of the analyses bear out our hypotheses. We suggested that there is a selection bias that operates in the teacher referral process for children with learning difficulties. This selection bias, we believe, is based on the propensity for boys and summer born children to be disruptive. Thus, they are often identified as requiring special needs support when their abilities are actually greater than other children who are not especially disruptive or behaviourally difficult and consequently are not identified as requiring additional help. When children who are not particularly difficult to handle are identified it is probably because their abilities and attainments are genuinely very low.

Whilst the differences in the abilities of the boys and the summer born children support our claims, the discriminant analysis provides us with additional insight into the problem of how the selection bias may work. The high correlation between IQ and the discriminating function for boys and girls and the otherwise small correlations of reading comprehension, mathematics ability and communication skill suggests that teachers are using some implicit concept of overall ability to identify the boys and girls who should be referred. The fact that

the pattern of discriminators is different for the gender and summer born variables suggests that behavioural disruptiveness cannot be the sole explanation of this particular selection bias. We would suggest that there is also a teacher expectation bias in operation, whereby the teachers expect the boys to be better performers than the girls. It is as if the teachers' expectations set different thresholds on ability and attainment for the boys and the girls. A consequence of this is that the boys can be below their threshold to the same extent as the girls, but this means that they are often of greater ability than the girls when they are identified.

Raudenbusch (1984) has argued that teacher expectations are indeed in operation and do influence the academic and cognitive performance of children with learning difficulties. Brophy (1986) has shown that teachers expect different kinds of behaviour from high and low achievers and treat those children differently. High achievers receive more teaching, more chances to participate in the classroom activities, more time to answer questions, more praise and less criticism. Low achievers, on the other hand, are expected not to know the answers to questions, to participate less in classroom activities and receive less opportunity to participate and less encouragement when they do (Minuchin & Shapiro, 1983). Dweck, Davidson, Nelson & Ema (1978) have also shown that these expectations are gendered. Boys are more likely to receive negative feedback from teachers than girls, but for boys this feedback refers more to lack of effort or motivation and not intellectual abilities. Girls when they receive negative feedback often get it in the form, 'never mind ..., you tried hard', implying that they did not have the ability to complete the task.

In the case of the discriminating function for the summer born and non-summer born children, whilst IQ remains the most important predictor, reading comprehension, mathematics ability and communication skill are very similar in proportion. This suggests that more specific information than just general ability is being used to identify summer born children for referral. The simplest explanation is that most teachers, especially after the infant school phase, do not expect summer born children to be any different from their non-summer born peers. There is no general expectation of difference at work. Why should there be? Mortimore *et al.* (1988) showed that very few teachers are aware of the relative ages of the children they teach and that age, as evinced in the summer born effect, is not a factor that teachers consider in adapting to the child's needs. Thus, teachers are using disruptive behaviour, in addition to the child's poor performance, to identify a child who may require help and then addtionally using several different measures of the child's ability to support their impression that a particular child may benefit from being moved to a school for children with learning difficulties.

These findings present several reasons for us to suspect that for some children the identification process depends as much on a child's behavioural difficulties as on any specific measure of ability or attainment. Additionally, the teachers' expectations that boys will outperform girls provides another bias. The consequences of a teacher-triggered identification system are quite striking. There are children in mainstream schools who are likely to have no greater abilities than some of the children in schools for pupils with learning difficulties. It is also possible that there are children with learning difficulties who are academically better performers than children who have remained in the mainstream system. Specifically, there are likely to be some summer born boys who have been identified for special schooling who are actually substantially higher in abilities than some non-summer born girls who have remained in the mainstream.

Whilst we would not dispute the evidence for the generally poor performance of children identified as having learning difficulties we suspect that some children who may require additional academic help are not identified and some children who require assistance with their behavioural problems, and not specifically academic abilities, are not receiving it. Whichever way we look at the problem, both boys and girls, and both summer born and not summer born children may be being disadvantaged by the present system, but in different ways for different reasons.

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Note

[1]Work such as Vogel's is based on the education system in the USA and as such is likely to refer to children with specific learning difficulties, e.g., dyslexia, as much as children with generalised moderate learning difficulties. Some caution should be exercised in extrapolating these results to the British educational system.

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