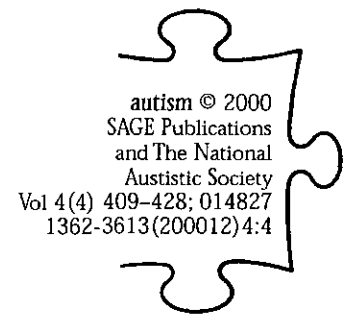


# A psychosocial study on restricted interests in high-functioning persons with pervasive developmental disorders



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**ABSTRACT** To explore how restricted interests are perceived by individuals with pervasive developmental disorders (PDDs) and their relatives, 18 in-depth semi-structured interviews were conducted with six high-functioning individuals with PDD, their parents and/or siblings. Results revealed that restricted interests play a significant role in the person's life that is acknowledged by most of their relatives. They provide a sense of well-being, a positive way of occupying one's time, a source of personal validation, and an incentive for personal growth. However, these positive dimensions are counterbalanced by their negative consequences. Following the demands and the support from their milieu, the participants in the study reported to have involved themselves in an active process to adapt, reduce or diversify their restricted interests. These findings on transformation of restricted interests under development and social pressure may have theoretical (for cognitive models of autism) and clinical consequences (in their use for rehabilitation).

## KEYWORDS

autism;  
high-functioning individuals;  
pervasive developmental disorders;  
psychosocial study;  
qualitative research;  
restricted interests

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## Introduction

In 1991, Margaret Dewey wrote, 'When we concentrate on the grim task of solving the problems of autistic individuals, it is easy to overlook the importance of pleasure. Yet without joy in living, all else is pointless' (p. 206). The scientific literature on the question of restricted interests is an example of this tendency to focus on the problematic aspects of autistic

behaviours without giving sufficient consideration to what they may represent for the individual. Thus, the literature primarily emphasizes the fact that restricted interests have a negative impact on social interactions. However, there is reason to believe that, from the vantage point of autistic individuals, restricted interests are also a source of positive experiences and can even provide a basis for their personal development. Autobiographical accounts provide some support for this hypothesis (Happé, 1991), but it does not appear to ever have been systematically studied. The present article reports the results of a study whose objective was to go beyond behavioural descriptions of restricted interests in order to fully grasp their psychosocial dimensions. More precisely, our goal was to describe the place that restricted interests occupy in the lives of persons diagnosed with high-functioning autism and to document their positive and negative aspects. This was from the point of view of the persons concerned and that of persons close to them. To achieve these objectives, semi-structured interviews were conducted with individuals with autism and their relatives (parents and siblings), when available.

### **The problem**

The Autistic Diagnosis Interview (ADI: Lord et al., 1989), which contains a more detailed description of the disorder's symptoms than does the DSM-IV, defines a restricted interest as 'a pursuit that differs from ordinary hobbies in: (a) its intensity; (b) its circumscribed nature (that is, it may involve a high level of expertise, but remains unusually focused and not developed into a broader context of knowledge); (c) its non-social quality (it may be shared with another individual with a similar circumscribed interest but not as part of a specialised club or association); and (d) its relative non-progression or development over time (that is, the interest persists, but does not form the basis of a building up of shared or used expertise)'.

In practical terms, the non-social quality of restricted interests means that they are not shared, are not socially interesting, and interfere directly with interpersonal relations. They are sometimes referred to as 'obsessions' that paralyse social interactions or impose an often constraining routine on family members. (Charlop-Christy et al., 1990; Charlop-Christy and Haymes, 1996, p. 529).

However, restricted interests have been used as reinforcers in social skills learning programs (Charlop-Christy and Haymes, 1996). Adults with autism were successfully integrated in competitive employment, with the support of a transition training program and a professional supervisor for follow-up (Burt et al., 1991). Furthermore, according to Tantam (1991),

the social development of high-functioning autistic individuals can be fostered by gradually increasing our expectations of them and by encouraging them to progressively engage in more contacts with other people so that they will accumulate social gains over the years. The individual's own efforts, the family environment, and encouragement by siblings and school personnel appear to be significant elements in this progressive socialization process. Nevertheless, there has been very little research concerning these psychosocial aspects of high-functioning autism, and little is known about the interaction between these psychosocial aspects and restricted interests. Studies on how individuals with PDD and their significant others cope with the restricted interests and their place in their life are very scarce. To our knowledge, only one study (Cesaroni, 1990; Cesaroni and Garber, 1991), based on data gathered directly from two individuals diagnosed with high-functioning autism, exists in the literature. A few articles present autobiographical narratives and analyses of these narratives (Happé, 1991; Ratey et al., 1992).

Whether these documents are autobiographical accounts or studies by researchers or clinicians, they explore the global subjective experience of autism. They show that certain persons with autism are capable of occupying various roles related to their restricted interests (workers, students, volunteers, members of hobby groups) in a successful and sometimes outstanding manner, and can lead relatively autonomous lives, whereas others achieve only a very limited social integration (Burt et al., 1991; Dewey, 1991; Happé, 1991; Tantam, 1991). However, very little is known about the circumstances or factors that have enabled these persons to deal better with their condition.

When one reviews the literature, it is striking how little use is made of certain methodological approaches in seeking to understand high-functioning autism. In the last few years, populational epidemiology, neuropsychology, and the various branches of neurobiology, especially genetics, have permitted significant advances (for a review, see Bryson, 1997; Happé and Frith, 1996; Bailey et al., 1996). On the other hand, qualitative approaches linked to psychosocial research and based on methods such as in-depth interviews, discourse analysis or case studies have remained greatly underused (Denzin and Lincoln, 1994; Miles and Huberman, 1994). Only a few qualitative studies are to be found in the literature in this field. They primarily deal with case reports (Williams et al., 1996) or with the way families come to terms with autism and with the relations between professionals and parents (Gray, 1993; 1994; 1997).

This study on restricted interests differs from other studies in the field since it focuses on the personal viewpoint of the subjects and those close to them. Thus, the study deals with the subjective experience of autism, not

in a global manner as in a life history, but rather with regard to one very specific area. Finally, this study provides an occasion to conduct qualitative research and to see how it can contribute to the development of psychosocial research on autism.

## **Method**

### **Selection of participants**

Participants were recruited within a research population characterized in a specialized clinic for high-functioning persons with autism. These subjects have participated in various research projects concerned with cognitive atypicalities in autism (Mottron and Belleville, 1993; 1995; Mottron et al., 1996; 1998; 1999a; 1999b). On referral by one researcher (L.M.), six individuals, who met the following criteria, were selected: a diagnosis of autism according to ADI or ADI-R (Lord et al., 1989) and with autism or Asperger syndrome according to DSM-IV criteria; 14 years old or over; a verbal IQ above 75; a clear pattern of restricted interests; sufficient communication skills to participate in an interview. According to DSM-IV criteria, only one of the participants would have been diagnosed with Asperger syndrome at the time of the study or in the past because he did not present any anomaly such as use of stereotyped phrases, pronominal inversion, neologisms and idiosyncratic language and had never experienced delayed development of language skills. The other five participants, on the other hand, presented with at least one of these anomalies at the time of the study, and therefore would have been diagnosed as high-functioning persons with autism.

These participants were purposely selected to represent a variety of personal characteristics, family environment and restricted interests (purposeful sampling). The sample was composed of four men, aged 22 to 52, and two women, aged 19 and 21. All the participants were single. Two lived in their own apartment, one alone and the other with an acquaintance, while the other four lived with their parents. All of the participants had an occupation: four had a job, while two were students. Of the four who were employed, three had an ordinary job in the service sector and the fourth worked in a supported employment centre. One of the students was taking courses at a college, while the other was taking a high school level adult education course. Table 1 shows the ADI ratings for each participant.

### **Data collection**

Participants were first informed about the study by a co-researcher (L.M.) and then contacted by telephone by the research assistant. All the persons invited to participate in the study accepted. Each participant received a written summary of the research objectives and signed a consent form.

**Table 1** Description of participants' clinical characteristics<sup>a</sup>

	<i>Individual scores for each area relevant for the DSM diagnosis of autism<sup>b</sup></i>				<i>Scores at the ADI</i>						<i>IQ</i>
	<i>Social interaction</i>	<i>Communication</i>	<i>Repetitive behaviours and restricted interests</i>	<i>Abnormalities before age 3</i>	<i>Age at first words</i>	<i>Age at first phrases</i>	<i>Stereotyped sentences, echolalia</i>	<i>Pronoun reversal delayed</i>	<i>Neologisms idiosyncratic language</i>	<i>Domains of restricted interests</i>	
Frederick	15	15	4	1	Normal	Normal	2	0	0	Video games, erotic telephone conversations	78
Gilbert	17	19	9	2	Normal	Normal	0	0	0	Watches, computers	115
John	20	14	11	5	Normal	Normal	2	0	0	Maps	115
Kathleen	16	13	7	6	48 months	48 months	1	2	1	Japanese cartoon books, videos	91
Judith	25	23	7	3	Normal	Normal	2	1	0	Dolls, postcards, music	81
Michael	16	10	3	2	Normal	Normal	1	0	0	Tools, history	114

<sup>a</sup> All information that might lead to identification of the participants was modified to protect anonymity.

<sup>b</sup> The cutoff used for diagnosis of autism in verbal subjects is: social interaction 10; communication 8; repetitive behaviours 3; abnormalities 1.

## AUTISM 4(4)

Each of the individuals with autism was interviewed twice. The interview proceeded with open-ended questions, with the aim of preserving the conversational context of the encounter. Six specific dimensions included in the schedule had to be covered. If not all dimensions were covered, other sub-questions were asked in order to obtain an appropriate answer for this (McCracken, 1988). The first interview dealt with the content and manifestations of restricted interests, and the person's opinions and feelings concerning these interests and regarding other people's perceptions and reactions to these interests. The issues that were covered included the following broad categories: description of interests, history, time devoted to interests, overall feedback from parents, siblings and others, personal opinion and feelings about interest, positive and negative aspects, perception of parents', siblings' and others' feelings about interests, usage of special interests.

The objective of the second interview was to validate the data gathered during the first interview and to explore certain aspects in greater detail. At the end of the first interview, a sociodemographic questionnaire was filled out to complete the information that had not emerged spontaneously during the interview. The interviewer also requested authorization to contact the participant's family for an interview. These interviews dealt with the same themes as the interview with the autistic participants.

Eighteen interviews were carried out between August 1995 and July 1996. All six individuals with PDD were interviewed twice and four parents and two siblings were also interviewed. Thirteen interviews were conducted in French and the five others in English. A senior research assistant carried out all interviews. They lasted from 35 to 90 minutes and took place at the participant's home or in a hospital or community centre. The interview was taped, with the participant's written consent, and the interviewer also took notes. A verbatim transcription of all interviews was made. All information that might lead to identification of the participants was modified to protect anonymity.

### **Data analysis**

Following each interview, a summary was prepared and mailed to the participant, who was asked to check the contents and to make corrections if necessary. This procedure was done to ensure validity of information. To ensure validity of data, a regular supervision of the coding procedure, an iterative process of analysis and team discussion of the preliminary results were established.

Analyses were performed with NUD.IST version 3.0 (Richards and Richards, 1991). This software allows modifying categories during the course of the coding and analysis process. As new data are added, a wide

variety of cross-category logical operations may be performed to construct new categories, to cluster them to form higher-level categories, or to establish links between categories. This software is therefore particularly appropriate for research of an exploratory nature aimed at generating new propositions. Exhaustive coding of all textual units (sentences) and the use of software allowing more than one code to be assigned to each unit also favour an analysis that is grounded in the original text rather than imposing a predefined categorization scheme.

Therefore, during the coding process, every participant's answer was analysed, sentence by sentence, in order to 'label' every idea, event or phenomenon ('sentence' refers to a group of words beginning with a capital and ending with a period). Some of these labels pertained to one of the six dimensions included in the interview schedule, while others covered new issues. Then, initial categories were enriched and modified, and new categories were introduced. For example, under the dimension 'restricted interests', the coding process started with the categories enumerated in the data collection section. The new categories that came out from the interviews were 'liaison with family, neighbours, community, society', 'comparison between restricted interests', 'reaction to others' feedback', 'strategies to overcome negative aspects'. From the parents' interviews, the category 'etiology, causes' was added.

After completion of the coding phase, data were analysed not only by theme and participant, but also by comparing and contrasting the 18 interviews, the six cases and the two categories of participants.

## Results

Participants described a total of 27 restricted interests. These interests fell into three main categories: (1) collections (books, dolls, videos, postcards, stamps, coins, tools); (2) music (listening to or playing music in an exclusive and repetitive way); (3) knowledge and activities pertaining to a very precise area, such as the American War of Independence, sport statistics, cars, watches, computers, insects, erotic telephone conversations, arcades. The experience of living with restricted interests can be reported under three topics: negative and positive aspects of special interests; their evolution over time; and acting upon restricted interests. The results for each topic and participant are summarized in Table 2.

### **Negative and positive aspects of restricted interests**

The autistic participants spoke with ease of the place that restricted interests occupy in their lives and on their negative and positive aspects. They also commented on the way others perceive and adapt to their interests.

**Table 2** Repartition of topics according to cases

	<i>Negative aspects:</i>		<i>Positive aspects</i>								<i>Changes through</i>					
	<i>impact on socialization</i>		<i>Well-being</i>		<i>Occupation</i>		<i>Validation</i>		<i>Personal growth</i>		<i>Adaptation</i>		<i>Extinction</i>		<i>Diversification</i>	
	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>	<i>I</i>	<i>P/S</i>
Frederick		X					X	X								
Gilbert	X	-	X	-	X	-				-	X	-			X	-
John		X	X				X	X		X			X	X	X	
Kathleen	X	X				X				X	-				X	X
Judith		X	X		X	X				X	X	X			X	
Michael	X	X	X		X		X				X				X	
<b>Total (Cases)</b>	<b>6</b>		<b>4</b>		<b>4</b>		<b>3</b>		<b>2</b>		<b>4</b>		<b>1</b>		<b>5</b>	

I = individual; P/S = parents and/or siblings.



Because their relatives were also interviewed concerning these matters, the viewpoints of the different participants may be compared.

**Negative aspects** Three of the autistic participants were well aware of the invasive character of their restricted interests. They mentioned that their family had suffered from this and had become exasperated. Gilbert noted 'my mom had a hard time', and 'a number of people gets tired of me'. Michael recognized that, owing to his interests, he did not go out and did not have a girlfriend. In the past, he 'went too far' and people 'were upset'. He did not know when to stop and got into debt practising his interests, which he compared to an addiction. However, the autistic participants mostly reported the perceptions of others who, as Kathleen stated, 'they find that I get into it a little too serious in terms of time'. The following statement, by Gilbert, is entirely representative:

Basically, what others will tell me is that I monopolize time that could have been used for better things. But sometimes I can't think of better things to do when I have my free time.

Gilbert was fully aware of the paradoxical consequences of his 'passion with time': 'I was so much knocked down, in the sense that my passion with time was just a waste of time. I was told it was completely useless.'

All family members described their autistic relatives as individuals who devote themselves too exclusively to their restricted interests. They reported that the conversations of their autistic relatives relate only to their restricted interests, that they talk about them all the time 'to the point that it can get on other people's nerves' (Kathleen's parents). Judith's parents deplored the fact that their daughter has no social life, while John's parents stated that 'ultimately, certain special abilities can set someone apart and singularize him, and even ostracize him.' They themselves did not see 'all that many negative aspects', but observed that for others 'it gets to be annoying.' John's sister, on the other hand, failed to see anything positive in her brother's interests 'that swallow up everything, all the time . . . we can't talk about anything else. It's more of a handicap than anything else.'

Michael's brother maintained that Michael's restricted interests are 'pathetic' in that they are a substitute for 'a direct social life' and that he has to surround himself with a multitude of objects 'in order to feel like a man'.

Other negative aspects are the repercussions on the professional, social and marital life of members of the autistic person's family. Frederick's mother mentioned that some of her son's interests represent a burden for her because she lives in fear that he might steal something or that she might have to answer for some of his acts, has to keep an eye on him, and tries to control his spending.

**Positive aspects** Five of the six autistic participants easily identified a variety of positive aspects to their restricted interests. The sixth participant clearly stated during the first interview that he saw nothing positive about his interests. During the second interview, however, he maintained that they give him 'validation' and that he felt 'very, very good' about his interests.

Four of the autistic participants mentioned that their interests are a source of pleasure and make them feel happy. Practising these interests generates a sense of well-being that they explained in different ways. Gilbert declared that 'it is a measure of predictability and a security in the sense that you know that you have something interesting to do, that you are looking forward . . . no surprises'. Playing with his calculator and calculating dates has a calming, restful effect on him, as smoking a cigarette has for others. Music has the same 'relaxing' effect on Judith. John and Judith both stated that their restricted interests enrich their daily life. In John's words, 'the interests that I had in elementary school, let's say they made me live a little psychologically, something different from my boring little life'. Judith stated that music allows her to be free, gives her 'pep', and is 'like a recreation', adding, 'I go off into another world, I need that.' Referring to her interests, she said, 'I feel good. I'm alone. I can do my stuff all alone. I have peace and quiet.' Michael will explain that since he is single and lives alone, he had to 'build' himself a 'stock of entertainment'. As for Gilbert, his interest in time makes him punctual and disciplined, which is highly appreciated by other people.

The restricted interest is seen as a hobby, a creative way to occupy one's spare time, to avoid boredom (Gilbert, Michael), and to relax (Judith). Gilbert said that having an interest keeps him from getting into trouble and is better than engaging in vandalism, getting drunk or fighting. Michael asserted that it is better to collect videos than to drink, smoke or watch pornographic movies. Because his interests are diversified, he has to be flexible in the way he uses his time. Judith pointed to the creative and educational character of her interests, saying, 'I keep informed, and I learn new things, and so far as I'm concerned, I'm creating something as well. I do things on my own. Things I like.'

John and Michael also viewed their restricted interests as a source of validation. John asserted that his restricted interests allow him to 'master something, to be responsible for it'. Restricted interests give Michael a sense of 'identity' and 'pride'. As mentioned above, Frederick affirmed that this was the only positive aspect of his interests.

With the exception of Michael's brother, all family members perceived some positive aspects in their relative's restricted interests. They also mentioned that the restricted interests serve to keep their children busy (Kathleen's and Judith's parents), and are a source of validation (Frederick's and

John's parents). Thus, Kathleen's parents said, 'she's a girl who never gets bored', 'who is self-sufficient'. Judith's parents stated that when they are no longer there, 'she will be able to keep herself busy'.

John's parents expressed a very positive attitude toward their son's restricted interests, declaring 'his comic strips and geographical maps gained him the admiration and regard of others . . . Now, his ability to write well gains him the regard of teachers, who appreciate having a pupil who writes properly.' They also noted, 'it gives him a certain serenity and self-confidence, more assurance, validation'. Frederick's mother stated that 'it's a source of pride for him'. Some of her son's extensive knowledge is socially profitable; when he talks about sports, for example, he 'becomes interesting'.

Parents did not refer to restricted interests as a source of well-being, as their children did. However, two of them described restricted interests as an incentive to develop one's knowledge, and foster personal growth. As John's parents affirmed:

When he was young, it led him to read about geography, his comic strips were always located in Arabic countries. He looked at maps. It made him learn all kinds of things . . . Restricted interests, can be a motor that helps him move forward at all levels.

Likewise, Judith's parents linked her ability to progress to her restricted interests: 'Today, I understand that in her life, even if there's nobody at her side, she will still continue to progress. And the most positive point, I think, is that today, she has the desire to live.'

### **Evolution of restricted interests during the autistic person's life**

Five of the autistic participants and their relatives spontaneously described their restricted interests from a diachronic perspective, explaining that their interests were not static but had evolved over time. When asked to describe the history of a specific interest (How long have you had this interest? How did you develop this interest?), the informants explained how a restricted interest had replaced another one or how it had taken various forms over time. These changes in the interests appeared to be linked to the fact that these individuals had developed different strategies to deal with their perceived invasive presence, and their negative social consequences. These strategies seemed to fall into three categories: (a) the person maintained the restricted interests and adapted them to meet the demands of the social environment; (b) at the instigation of family members, the person learned to suppress or reduce restricted interests; or (c) the person diversified his or her interests. During the interview, each of these strategies was described in detail.

**Adaptation to the environment** One of the participants, Gilbert, explained that he maintained his restricted interests through a process of adaptation to the environment in which, as he expressed it, he 'learned a lot from social conventions'. This adaptation took three forms: concealing the interest, practising the interest solely in private, or modifying the interest to make it socially acceptable. Thus, an interest in time spans, such as the number of days between two events or between an event and the current date, was better accepted after he started to use a pocket calculator rather than his watch to carry out his calculations (the latter being perceived as very impolite). These adaptive efforts were entirely conscious:

What happened is that, as I was an adult, I sort of tried my best to hide it from others, and not let others see it. It became kind of a private life, because I saw that when I was saying, you know, there are so many days till Christmas or whatever, it bored people. I mean people aren't interested in knowing that, however to me, it's like an addiction.

This person also said that he chooses the circumstances in which he engages in his interests 'to avoid embarrassment or frictions with others', preferring places such as libraries, where people will not judge him. In his view, one must find 'ways of getting around other people's disapproving attitudes'.

Likewise, Michael said that he keeps his interests under control, while 'standing up for myself and not allowing other people to impose things on me'. Kathleen and Judith explained that this control takes the form of improved management of time spent in restricted interests in order to stay within 'reasonable' limits.

In the same sense, Judith's parents stated that their daughter has become less intransigent with regard to the time that she devotes to her interests. She can now accept changes in her routine or schedule and refrain from engaging in an activity when not appropriate to the circumstances.

**Extinction/reduction** One autistic participant said that he no longer had any restricted interests. Both this participant and his sister stated that their parents and professional care providers had contributed to decreasing this 'fixation' on an interest. This participant was very proud to have learned to control the intensity of his involvement in restricted interests through developing other interests. He considered that he had 'become more mature' and 'learned that there's more than one thing in life'. According to this participant's sister, their parents succeeded in 'normalizing' her brother because 'they said to themselves that they would explain to him rationally what we understand intuitively'. She described the way in which the parents actively and deliberately took measures to ensure that her brother would

cease to engage exclusively in a single interest and that he would listen to other people:

Before, he didn't listen . . . Now we can have a conversation with him, and almost introduce a topic and have him follow us. He's even able to take the initiative of bringing up topics himself, he's capable of staying on the topic even if it's not his main interest.

According to the parents, their son's restricted interests did not decrease significantly until efforts were made to promote his social integration. They taught him that 'one has to pay attention to people, see what interests them, vary the intonation of one's voice, smile at others, etc.' Maturation and the intervention of professionals such as speech therapists, educators and occupational therapists also contributed to his 'normalization'. The mother summed up the process of gradual reduction of her son's restricted interests in these terms:

When John was little, he had very strong, very specific interests which, as he grows up and we get all kinds of professionals involved, his interests become less intense and are replaced by greater social integration . . . as we intervene, the specific manias become more mitigated and then disappear.

**Diversification** Four out of six participants said they had learned to diversify their interests: 'With maturity, I learned that they are more than one thing in life' (John). All except one said that their interests had broadened over time. They recalled that as children, they had concentrated on only one or two interests. Over time, they developed others, which, as John stated, 'forces you to become more realistic'. By reducing the intensity and the time devoted to a particular interest, they were able to extend their interests to other themes or activities. One interest, usually developed in childhood, remained central; however, at the time of the interview, the participant no longer focused solely on that interest but instead had developed others. The content of the interest may also evolve, such as the themes of drawings or of collections. The parents seem to have played a decisive role in 'putting in touch with other forms of learning or interests'.

### **Acting upon restricted interests**

These strategies of adaptation, extinction/reduction and diversification reflect different ways in which autistic participants exercise a certain measure of control over their restricted interests. Thus Judith proudly asserted that she could control the amount of time devoted to her restricted interest, saying 'I drew up a schedule for myself'; Gilbert spoke of 'discipline'; while Michael and Kathleen explained that they now manage to spend less money on their interests. Seemingly, as these individuals with

PDD became more socially integrated, their interests decreased, became more diversified, or were even said to have extinguished in one case. In general, family members said that their autistic relatives had learned to 'deal with their environment' and had become more flexible as they grew older.

The immediate environment plays an important role, particularly the parents, whose efforts may sometimes converge with those of re-education professionals. However, parents stated that they had to rely on themselves and follow 'their own intuitions', given the lack of clear guidelines. Participants saw efforts to modify restricted interests almost exclusively in terms of interactions with family members. Only Gilbert mentioned the broader social context, stating that in the 1970s there was greater tolerance of differences by comparison to the greater rigidity of present-day society. His impression was that, at the time, he did not need to restrain behaviours related to his interests as much as he does now.

These changes in the intensity of restricted interests were viewed positively by all categories of participant and seen as signs of progress and maturity. However, a father stated that this process also involves a certain loss:

It's a bit of a problem for us as well, as a child socializes more and comes out of his little inner self and becomes aware of external constraints, well, that takes away some of his particularities. Therefore, some of his special talents.

## **Discussion**

The interviews with the high-functioning autistic participants were a very rich source of material and could open up new perspectives concerning the question of restricted interests. However, the method of in-depth interviews with a small purposive sample has certain limitations. Participants were selected to represent different characteristics of concerns according to gender, age, living circumstances and type occupations. These persons met the clinical criteria for autism or Asperger syndrome, but were not necessarily representative of the average clinical population, in terms of high IQ and level of social integration, even if their accomplishments were real and constituted an example of what can be achieved. Furthermore, the experimental effect probably biased responses positively. In the interview situation, respondents may have experienced a certain pressure to organize their thoughts and have been influenced by considerations of social desirability, which may have led them to present their situation in a more favourable light than they would have done in a natural context. Consequently, since only a small number of cases were studied, one must be cautious about generalizing these findings. This is in line with Eaves et al.'s (1994) recommendations which highlighted the differences between subgroups of autistic

children. The highest-functioning group (28 out of 166) was described as clearly different from the others in both cognitive and behavioural terms. They were sociable with adults, much brighter, highly verbal: 'They had narrow interests but often showed imaginative or pretend play although it was stereotyped and repetitive' (1994, p. 14). The authors call for a close description of characteristics of samples, so those general conclusions may not be drawn from unrepresentative samples. They emphasize that this is particularly important for small studies (1994, p. 16). This warning certainly applies to this study. Yet the present analysis demonstrates how a subgroup of high-functioning individuals with autism can actively act upon their restricted interests and the associated social handicap.

For instance, all six participants in the study and their relatives spontaneously mentioned the changes that have occurred over the years regarding the restricted interest. This is in contrast with the resistance to novelty and inability to generalize that is often associated with PDD and that is considered to be among the main obstacles to the re-education of individuals affected by these disorders. Statements by some of the high-functioning autistic participants in this study suggest that, within their area of interest, they show no resistance to novelty and even manifest adaptive capacities. One of the main findings of this study concerns the changes in the participants' relation to their restricted interests and their efforts to control to some extent the place that these interests occupy in their lives through adaptation, reduction/extinction or diversification. The interviews show that these autistic persons are not passively wedded to their restricted interests. Rather, they develop strategies to adapt these interests to the demands of their environment, to diversify them, or to decrease the amount of time devoted to them.

These data constitute an original contribution to understanding the phenomenon of restricted interests. Until now, these interests have generally been studied from a synchronic perspective, which has led to an emphasis on their rigidity and limitation to a single area. The present study reveals that restricted interests can change in terms of both their content and the place they occupy in the person's life. This opens up highly stimulating perspectives concerning the possible neuropsychological processes underlying restricted interests. A careful study of the evolution of restricted interests over time might show that it follows a certain sequence and that the different manifestations of the interests are nothing but successive transformations, semantically more advanced or mature, of a single property or object. In some particular cases, hypothetical relations between the limitation in processing specific types of information and the domain of restricted interests has been proposed (Mottron and Belleville, 1993; Mottron et al., 1996; 1997; 1998). Another possibility would combine two

independent neuropsychological factors. On the one hand, an executive factor, common to all autistic subjects, would be responsible for the 'restricted' aspect of interests. On the other hand, another component, different across subjects, would determine the choice of the domain of interest. Recently, one of us published a case where neuroanatomical lesions (frontal and temporo-occipital), cognitive deficits (abnormal executive functioning and visual agnosia, sparing only the perception of simple geometric patterns) and domain of restricted interests (drawing clocks) were highly convergent (Jambaqué et al., 1998). However, Turner (1997), in a theoretical attempt to account for repetitive behaviours by abnormal executive functioning, concluded that they probably rely, not on a single, but rather on a group of cognitive deficits or mechanisms. We recently proposed a model where enhanced low-level processing of perceptual information may account both for peaks of ability in non-savant autism and for the choice of special ability and of restricted interest (Mottron and Burack, in press). This proposition differs from the weak central coherence model in predicting irreversible enhancement of a subgroup of information processing operations, and not a mere imbalance between local and global processing or a deficit in analysing configurable aspects of visual and auditory patterns. This model is currently more powerful for special abilities than for restricted interests. Nevertheless, a case where restricted interest for music is associated with enhanced auditory perception has already been described (Mottron et al., 1999c; for a discussion of this position, see Mottron et al., in press).

Another significant finding is that all the reported changes in interest patterns took place in a context of sustained social involvement. The six autistic participants live in a context in which they have to assume a variety of social roles (son, daughter, brother, sister, worker, student, roommate), interact with different social networks, and deal with obligations linked to day-to-day life. To them, social integration and demands have been a decisive factor in the process of 'normalization' of their restricted interests. This would seem to confirm Tantam's hypothesis that 'Active socialisation with limits on time spent in withdrawal into special interests, inactivities or stereotypy' (1991, p. 179) is a decisive factor in the improvement of social behaviour of autistic persons. From a sociological viewpoint, these results show that although restricted interests may not directly contribute to the socialization process, they are sensitive to social pressures. Cesaroni and Garber (1991) came to the same conclusion concerning the stereotyped behaviours of the two participants in their study, stating, 'Both participants were able to bring their stereotypical behaviours under voluntary control as a result of their awareness of nonautistic individuals' reactions to these behaviours' (1991, p. 303).



A recent self-report (Wiley, 1999) offers impressive support for these findings.

An impossibility to modify spontaneously restricted interests might have been predicted according to a 'theory of mind' account of autism. One might indeed expect that limitation in the ability to handle subjective particularities, related to a deficit in mentalizing functions, might limit the capacity to influence restricted interests. Our findings show that this is not the case. This unexpected ability can be explained, either by these subjects being sufficiently able in mentalizing operations to act upon their restricted interests, or by this transformation being not under the dependence of mentalizing ability. The former interpretation is plausible as very high-functioning individuals with PDD pass first-order theory of mind tasks (Bowler, 1992). The latter explanation is more compatible with our proposition that restricted interests might result from the combination of early low-level perceptual atypicalities and deficit in executive functions.

These findings relating to the ways in which autistic persons and those close to them can work toward achieving a certain control over restricted interests are counterbalanced by the findings concerning the importance of these interests for autistic persons. Even if negative aspects are recognized, individuals as well as their relatives are sensible to their occupational or self-validation dimensions, their contribution to their well-being (individuals) and their personal development (parents). Those who succeeded in detaching themselves to a certain degree from such interests went through a sort of mourning process, and attempted to find in socially acceptable activities the positive aspects previously found in restricted interests. Once again, Tantam's (1991) concept of 'social gain' seems very relevant, in that these social gains should, in a sense, compensate for the loss incurred when the person tries to manage his/her restricted interests more efficiently.

## **Conclusion**

In this research, a qualitative method was used to study restricted interests from the perspective of the subject's experience and its conclusions need further validations. Although the results of this study cannot necessarily be generalized, they should permit other researchers, in other contexts, to determine whether they are applicable to their own data and to draw lessons that will enable them to generate other propositions applicable to their own context (Erlandson et al., 1993). In this regard, this qualitative study has achieved one of its goals, namely to permit the emergence of new points of view based on empirical data. These data, focused on the diachronic transformations of restricted interests, and therefore their

developmental dimension, generate new research questions. For example, do restricted interests generally evolve along identifiable patterns? Can any underlying neuropsychological or cognitive mechanisms be identified? Can these underlying mechanisms explain the origin of restricted interests as well as the reasons for their choice, their maintenance or their modification? What is the relative weight of the severity of the disorder, the individual characteristics of the person affected, and the reactions of family members, professionals and the general social environment in influencing this evolution? A retrospective or, better yet, a prospective study that would systematically document the chronological evolution of restricted interests could provide certain answers to these questions. In the same way, comparison groups of individuals with different levels of severity of symptomatology or community participation would allow us to determine to what extent the results from this study are related to greater social integration.

The data also highlighted the importance of psychosocial factors, more particularly the interaction with the immediate social environment, in influencing the evolution of restricted interests. This interaction seems to play an essential role in facilitating the 'normalization' of high-functioning autistic individuals, but at the cost of giving up their exceptional abilities. Is this an inevitable consequence of the process, or can one conceive of an intervention to promote sociability through which these abilities might become socially integrated and useful?

Finally, the study highlights the heterogeneity of the trajectories, strategies and modes of social integration developed by the autistic participants. Thus, the heterogeneity that has already been observed on the clinical and cognitive levels also seems to exist on the psychosocial level (Eaves et al., 1994). This raises the question of whether there might be some relationship between types of cognitive deficits and types of social adaptation. Thus, the results of this first study provide an incentive to pursue further research on high-functioning and socially integrated individuals with pervasive developmental disorders – research that integrates clinical, neuropsychological and psychosocial dimensions.

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AUTISM 4(4)

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