

# **An Educational Exploration Based on Psychomotor Intervention Strategies for Autistic Patients**

**Rogers Mathieu**

*Higher Institute of Sport and Physical Education of Sfax, Sfax, Tunisia*

## **ABSTRACT**

The competency model is the result of a comprehensive intervention development behavior developed as a method to alter the developmental trajectory of autistic children. The aim was to help children become more socially oriented and develop other skills through social interactions with adults and their integration into a specific educational environment. The intervention is based on the principles of applied behavioral analysis, but aims to teach children skills in an institutional setting [9]. Several areas of development are both stimulate and teach skills taking into account the level of development of the child in each area. Children who participate in the ESDM are assigned a multidisciplinary treatment team that assesses their progress, including individual learning objectives, are targeted during play sessions. The child's performance and skills are used to assess each child's progress until they are ready for intervention. A relatively new intervention, so that the whole search examination of its effects is somewhat limited. In cognitive improvement, language, coping skills and diagnosis controlled comparisons did not show gains. The perspectives of our research must be directed towards a promising intervention for young autistic children. Future research should include more methodologically rigorous studies as well as independent replication, reviews of the generalization of the skills taught and direct comparisons. The development of a frame of psychosocial skills that will be oriented to the good management and distribution of the knowledge of the educators in favor of the good integration and good communication of autistic subject.

## **KEYWORDS**

*Autism; Education; Intervention plan; Intervention strategies; Psychomotor; Skills modeling.*

---

### **1. Introduction**

Formal education is based on the theoretical foundations of learning and the cognitive and behavioral approach, as well as on the knowledge and development of the child. Autism is a group of functional atypical

whose educational strategies are in line with the child and the application of the child's personalized program ensures these principles during educational sessions. The educator is often integrated into the child care programmer. Integrated education for positive social interactions in young children presented by the Denver program and the ESDM (Early start Denver model) This Denver program: (Rogé, B., 2013) [1] was created in the eighties at the University of Colorado and is aimed at preschoolers, from two to six years old (Rogers, Herbison, Lewis, Pantone and Reis, 1986; Rogers and Lewis 1989). This programmer integrates both educational and behavioral elements. It focuses on the development of cognitive skills, and on access to symbolism and communication. It is based on the practice of fun activities. Indeed, play is considered to be the support of the child's first learning, and in particular of social, emotional, communicative and cognitive skills (National research council, 2001). The child's education is thus integrated into social interactions, which are established between the child and the adult and which are described as positive. The development of socio-emotional skills involves experimenting with interpersonal relationships with adults, but also peer group sessions [2]. Play and positive interactions are the foundation of this program (Rogers, 2001). The role of the adult and the goals of the different play activities used depend on the objectives established in the child's personalized program, and vary according to his progress. ESDM: Early start Denver model [1]. The ESDM is a program based on a developmental approach, where autism is considered a developmental disorder. This early program targets all developmental areas affected by autism. Hence the importance of analysis of interpersonal relationships, modulated by the quality of relationships and based on the implementation of positive effects, and on certain qualities of the worker such as receptivity, sensitivity, and reciprocity this model gives a great place to parents. The pedagogical practices used can be applied both individually and in groups in motor practice sessions. However, this requires training for all those concerned with the child. Moreover, it is a method that is part of interdisciplinary. The different professionals who follow the child will use these particular practices by sharing common goals. Within this multidisciplinary team, a person is designated as a resource person, who will work in connection with the family. This model was born from the discoveries made over the last twenty on the deficits present in autism at the level of: social orientation, attention sharing, and initiation of exchanges, imitation, communication, play and in the ability to learn. In addition, children with autism do not feel positive about social interactions. From 6- 9 months the child seems less in the interaction, causing a decrease in relational contact with his entourage. The child is increasingly withdrawn into isolation, says autistic. This has consequences on its neuronal and psychological development.

Competence is built from a field of activity, such as a trade. Each skill is unique since the skills of such a profession as the psychomotor therapist will not be similar to those of such another profession. For Martineau and Gauthier (2000), professional skills stem from knowledge of experience. For them, knowledge of experience is knowledge related to work tasks. It is mobilized on the ground and acquired in action. He is mobilized during interactions with students or other actors in education. Although competence may be the basis of an internal process, it is felt in external acts. It is observable and often, the skill seen in others seems simple because everything works without problems and without mystery. Its complexity implies a social recognition with regard to the competent person (Rey, 1998). Py and Leduc-Claire (2008) insist on the fact that professional skills are acquired through alternation and articulation of theory and practice. Professional practice would make it possible to highlight situations to be analyzed, which could be linked to theoretical notions. Thus, the construction of professional skills begins with practice after analyzing the situation concerned (Euzet, 1998). This during the practice is not only the terrain. It is also the place where the problems to be solved come from. The Boterf (1994) even speaks of competence in action since it considers that competences are always developed in practice. According to Perrenoud (1999), skills are composed of knowledge. Skills are capacities for action. The practitioner must be able to mobilize and update his knowledge and without this capacity, knowledge would remain mere knowledge. Rey (1998) shows the difference that remains between competence and knowledge; professional skills are a set of knowledge, knowhow, know-how that are linked to the practice of the teaching profession. Altet (1994) cited by Euzet (1998), professional competence is more precisely defined as the ability to mobilize these different resources mentioned above.

Thus, professional competence can be considered as a high degree of adaptation to a given situation in the present (Euzet, 1998). Martineau and Gauthier (2000) argue that skills development builds professional identity. It is based on the development of professional skills that allow a mastery of the professional act as well as on the recognition of others. Indeed, this adaptation must be organized because in education, decisions must be made quickly (Gervais, Correa Molina and Lepage, 2008). According to Perrenoud (2006), it is the schemes that make it possible to organize resources and transform them into skills. Perrenoud (1994), quoted by Charlier (2001), considers that schemes use knowledge and transform it into skills. It is thanks to the schemes that knowledge is activated and allows skills to be updated. The Boterf (2000), resources can be personal (knowledge, know-how, skills, qualities, experiences, etc.) or environmental (material facilities, relational networks, etc.). The latter are divided into four categories, which are themselves divided into subcategories:

## 2. Knowledge

Theoretical knowledge: Theoretical knowledge is divided into knowledge to be taught and knowledge to teach. The knowledge to be taught is the knowledge of the different disciplines to be transmitted to the students. The knowledge to teach, on the other hand, concerns the pedagogical knowledge that helps us for the interactive management of the classroom. This different knowledge's cannot be dissociated since they work together. Practical knowledge, on the other hand, comes from experience in the field and is also divided into two groups. Knowledge about practice is knowledge about the procedure to be adopted. Then, the knowledge of the practice is the knowledge coming from a successful practice (Bonnichon and Martina, 2008). Knowledge understands a situation. They can be concepts, disciplinary, organizational or relational knowledge.

- Environmental knowledge: knowledge related to context such as rules, organization, characteristics of objects.
- Procedural knowledge: knowledge that makes it possible to act according to methods aimed at achieving a goal.
- Know-how or operational capabilities o Formalized knowhow: approaches, instruments, methods mastered by the professional.
- Empirical know-how: know-how drawn from lived experiences.
- Cognitive know-how: intellectual operations allowing decision-making, analysis, invention or creation.
- Personal abilities or qualities: curiosity, strength, conviction, honesty, etc.
- Emotional resources: warning or encouraging signals that help guide one's action. Knowledge is therefore part of the development of professional skills (Altet, 2001).

The expected skills feiman-nemser and Buchmann (1987), cited by Boudreau (2001) believe that the purpose of teaching is to transmit knowledge and ensure that it is acquired. To do this, the teacher should have skills, such as an ability to interact and commit to the success of students' learning. Pou Boudreau (2001), the starting point for any teacher should be student learning. According to Clerc (1998), the work of a teacher is divided into three areas.

## 3. Methodology

The Denver program was created in the eighties at the University of Colorado. It is aimed at preschool children, from two to six years of age. This programmer integrates both educational and behavioral elements. It focuses on the development of cognitive skills, including access to symbolism and communication. This model is based on the practice of fun activities. Indeed, play is considered to be the support of the child's first learning, and in particular of social, emotional, communicative and cognitive skills (National research council, 2001). The child's education is thus integrated into social interactions, which are established between the child and the adult and which are described as positive. The development of socio-emotional skills requires bias in

experimenting with interpersonal relationships with adults, but also with peers (group sessions). Play and positive interactions are the foundation of this program (Rogers, 2001). The role of the adult and the goals of the different play activities used will depend on the objectives established in the child's personalized program, and will vary according to his progress. ESDM: early start Denver model [4].

The ESDM methodology is an evaluation tool whose criteria are based on the sequences of skills development belonging to eight different domains: language pouring on the receptive and expressive, social interactions, global motor skills and fine motor skills, imitation, cognition, and play skills. This curriculum consists of 480 items organized into 4 levels: several periods from 9-12 months to 48 months (first level 9/12-18 months, second level 18-24 months, third 24-36 months and fourth level 36-48 months). This tool has been designed specifically for children with ASD. The organization of the items and their place in the different levels was determined by research on the typical development of the child, and by clinical observation of the development of the child with ASD. The curriculum is administered to the child either by a single professional or by the entire interdisciplinary team that shares the different fields, and this every twelve weeks. The administration must be similar to the intervention: that is to say, it is necessary to structure the room as for the care, and to set up an interactive style based on the game (choice of materials and favorite activities). All areas should be assessed; items at the lower or higher level should be examined if necessary. Parents are asked to provide information: on the child's skills, on the routines he knows his favorite activities by direct interview. The behaviors thus observed are coded according to a defined code, then quoted and finally compared to a checklist. Mastery of learning practices: The ESDM uses the principles of different methods. Indeed this model borrows certain principles belonging to the DENVER method [3]: the modulation of the awakening of the child, the dyadic commitment, the quality of the elaboration of routines, the combination of the different objectives, the use of communication in all activities, varying the functions, promoting non-verbal communication, and the use of the one more word rule (Use one more word than the number of words the child uses). It also uses TRP principles: follow the child's example, give him or her choice (activities, materials), use the tour de rôle, and reinforce all the child's attempts. Finally, he also uses the principles of the ABA: attention, the ABC format (SRC in French).The application of behavioral teaching techniques, the repetition of actions, and the management of undesirable behaviors.

The child and the therapist carry out together, from session to session, the same routine activities. These routines are shortterm activities (2 to 4 minutes) that are selected according to the preferences, and interests of the child. They have several objectives, in different areas. The implementation of routines goes through several stages: from the choice of activity, to the learning of the routine, by developing the turn of role and collaboration between the two protagonists, to the complexity of the routine action to expand the repertoire of activities of the child and develop his mental flexibility, until the cessation of the routine, to move to a new routine. There are several types of routines. Routines with objects make it possible to work on the alternation of attention, on the triadic commitment (child-object-therapist) and joint attention. Sensory routines are part of a positive effect, in order to promote dyadic engagement, in particular through the sharing of pleasure activities. These sensory routines make it possible to modulate the child's awakening and attract his attention, to promote reciprocity and social exchanges. The objectives pursued through these different routines are the development of communication, cognitive and motor skills, but also to promote imitation, joint attention and exchange. To summarize the pedagogical practices used in the ESDM [5]. Are based on the management of the child's attention, the modulation of his affect and awakening, the optimization of his motivation, but also on the quality of the dyadic commitment, in a positive effect. The adult must be sensitive and receptive to the child, and adapt to the child's language skills. The activities chosen must promote joint attention and cognitive development. Learning is based on the implementation of routines and repetitions, but also by the introduction of variations within these routines. Nevertheless, it happens that despite the respect of all these principles the child does not progress. In this case, this model established a decision tree, a hierarchy of measures to be implemented according to the situations.

The sessions are carried out in a shared game environment without any learning constraints. They are predictable with the introduction of routines, safe reference points for the child. The sessions are often biweekly and of short duration of thirty minutes each, during which the activities are supervised by two people, who alternate between the role of observer and that of psychomotor therapist. The intervention was carried out through the functional assessment of the child and the creation of an individualized project. The functional evaluation of the child guided us to structure the detailed developmental phases of the child by detecting the strengths, and still fragile points, the emerging skills to be consolidated. The assessment focuses on the examination of: autistic symptomatology (ECA-R), disorders of psycho physiological functions, cognitive functioning, language or socio-communicative skills Vismara, L., Young, G., & Rogers, S. (2012) [6]. This assessment also makes it possible to know what the child appreciates in order to define the activities that will be proposed to him during the sessions. The educational provisions drawn up are regularly reviewed following reassessments of the child. It is about conceptuality the environment so that the child is in the best possible conditions promoting his motivation to learn, and developing his skills. The principles are necessary: serenity, the availability of the psychomotor therapist, and reciprocity. Serenity is based on the establishment of a secure atmosphere. The objectives and effects of EFILE on the development and behavior of children with autism is combined with a comprehensive care programmers focused on the child, his or her educational environment and the nature of his or her interaction with the psychomotor therapist. The goals of the combination of these interventions are to homogenize the psychological development of the child, the installation of emerging skills and pivotal functions to improve the socio-emotional adaptation of the child in his environment, and improve his integration into society.

#### **4. Study Population**

The study concerns 25 children between 4 and a half and 6 years old, cared for at the private center of the autistic child in Sousse, benefiting from TED session several times a day. This over a period of 3 months. An initial assessment is conducted and then a reassessment takes place at the end of this period. This re-evaluation is to check if an improvement in capacities: imitation, shared attention, interaction, regulation of behavior, perception has been made. In addition, regular evaluation of autistic symptoms to show if a decrease in social communication disorders is achieved. The analysis of the child's interaction with the environment will be observed considerably to check whether the children accept the novelties of the environment, and better match their behavior. These testify to the improvements following this intervention, promotes the development of the child. Perrault (2010) builds his own tool to support the tasks and situations that teachers face. This tool runs on 10 skills. These competencies are categorized into 3 types of competencies that are respectively competencies of transversal competencies, at the heart of the profession and academic skills. Among the competencies "at the heart of the job" is the seventh competency "evaluating students". According to Gérard's methodology (2003) to assess the effectiveness of a training, the respondent do selfassessment of mastering these competencies which consists in estimating his level of effectiveness on a scale of 1 to 8 boxes ranging from "not at all effective" to "Quite effective" for each of the academic competencies, at the core of the business and transversal before and after the Training. Using the 10 skills, he built a training evaluation scale. The scale consists of 33 statements where the teacher is asked to indicate his opinion on a Likert scale ranging from 1 (quite disagree) to 8 (fully agree) (see appendix). According to Gerard (2003), each participant "agrees to take up the different objectives of the training, formulated from the skills referred to in vocational training, and to ask the participant to estimate for each objective his level of Competence before and at the end of the Training. The validation we made of the tool showed us that this double questioning can be done at the same time, at the end of the Training. This questionnaire is composed of 10 dimensions, represents the 10 competencies, and each competency has statements according to the (Table 1) below. The skill to be evaluated in this research is the competency "evaluating students", which is a competency in the core of the profession that touches the act of Teaching.

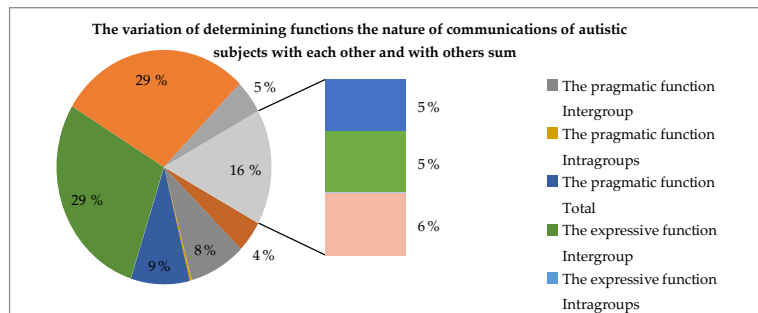
## 5. Results

Our results show that at the functional level, there are deficits in social communication channels. Indeed the disorders of social communication present in people with autism are due to abnormalities of the functions of decryption of the data transmitted by others. To promote communication, learning and the homogenization of the child's development. The processing of information, and the developmental shifts associated with the objectives of these interventions seem to be in line with the role of the psychomotor therapist. In addition, these interventions are based on certain processes that are defined as the ability of neural networks to modulate according to the experiences that the child makes. It seems more important. These interventions are based on certain processes of skills and management of intergroup and intragroup relationship (Table 1) presents the variation of functions determining the nature of communications of autistic subjects with each other and with the psychometrical, so the functions are expressed by:

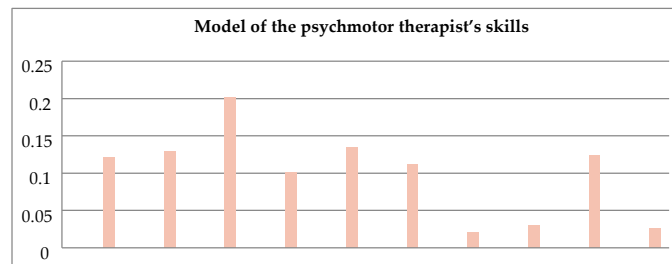
- The semantic function whose non-verbal communication transmits a certain amount of information is independent of the verbal (symbolic gestures, iconic and clues).
- The syntactic function or the non-verbal intervenes at the level of the segmentation of the spoken string, and at the level of the synchronization of verbal and non-verbal signs.
- The pragmatic function that distinguishes three functions influencing the course of a conversation
- The expressive function, which provides information on
- The interlocutor (voice, clothes, gaze).
- The appetite function, which reflects the motivations, goals or intentions of speaker behavior.

**Table 1.** The variation of determining functions the nature of communications of autistic subjects with each other and with others.

The variation of determining functions the nature of communications of autistic subjects with each other and with others						
		sum	ddl	Medium	F	Sig.
The semantic function	Intergroup	10,153	23	0,441	3,531	0,4
	Intragroups	0,125	1	0,125		
	Total	10,278	24			
The syntactic function	Intergroup	4,684	22	0,213	.	.
	Intragroups	0	1	0		
	Total	4,684	23			
The pragmatic function	Intergroup	9,097	23	0,396	1,139	0,641
	Intragroups	0,347	1	0,347		
	Total	9,444	24			
The expressive function	Intergroup	30,704	23	1,335	96,117	0,08
	Intragroups	0,014	1	0,014		
	Total	30,718	24			
The appetite function	Intergroup	4,971	23	0,216	6,917	0,293
	Intragroups	0,031	1	0,031		
	Total	5,002	24			
The reactive function	Intergroup	5,93	23	0,258	3,667	0,393
	Intragroups	0,07	1	0,07		
	Total	6	24			



**Figure 1.** The variation of functions determining the nature of communications of autistic subjects among themselves and with others



**Figure 2.** Intervention strategies and model of the psychomotor therapist's skills

According to (Figure 2), we see that there are 4 skills that:

- Skill 4: Design and implement your teaching (10.18%) determine the model of professional skills of the psychomotor.
- Skill 6: Take into account the diversity of students therapist intended to teach autistic children, they are (11.20%) respectively skills 1, 2, 3 and 5:
- Skill 7: evaluate students (2.05%)
- Skill 8: Mastering information and communication
- Skill 1: act as a public servant and in an ethical and technologies (3.01%) responsible manner (12.10%)
- Skill 9: work as a team and cooperate with parents and
- Skill 2: Mastering the language to teach and communicate school partners (2.4%) (12.9%)
- Skill 10: training and innovation (2.59%)
- Skill 3: master the disciplines and have a good general culture (20.12%)

## 6. Discussion

The objective of our study was to provide the autistic person with the means to communicate as well as understanding and adaptation with the world around him. The determination of the model of professional skills of the teacher and development of autonomy to life in society base on an education oriented to psychomotor intervention strategies while taking into account the particularities of the autistic person and the model of pedagogical and psychosocial skills of the teacher to create the best conditions, This relying especially on the curriculum of the ESDM (Early start Denver model. Rogers, S., Dawson, G., 2013) [4] focused on the development of cognitive skills, including access to symbolism and communication for the construction of the intervention plan [7]. Our work has therefore ensured the development of a model of professional skills of the teacher in charge of building an intervention plan for autistic children in Tunisia. The results showed that the role of teachers entrusted with tasks of developing the social and pedagogical skills of people with autism is based much more on the active mode of motor communication and adequate transfer of knowledge oriented towards cooperation and understanding whose goal is integration and adaptation, learning is therefore a means and action of knowledge transfer which is only one component of the model of identity skills vocational

training of the teacher. The objectives of our research are based on the child's skills and abilities. The functional objectives were oriented towards actions of adaptation and functional analysis of the expected behavior to ensure following the identification of the action of the teacher with a view to highlighting the teaching practice hence the identification of the behavior in its generalization, its initiation, its spontaneity. And then determine the criterion for this behavior the use of the Denver early start model agrees that it is necessary to have more data with better methodological rigor in order to create a stronger evidence base to support the intervention [8]; Warren et al., 2011; Waddington et al. 2016). The study is therefore an important contribution to the field of early intervention research on autism and has many design strengths, including the appropriate intervention plan and structured education. However, our results are consistent with Combine's research, which also identifies several factors that could threaten the internal and external validity of the study results. She points out that while some of the gains made by the ESDM group were statistically significant; the magnitude of these gains was moderate. The use of adaptive score theory due to increased age of participant's remains necessary, to ensure that there has been no real increase in the rate of development. Most of the gains are attributable to language, from where the use of the study of the mastery of skills of the educator and the good management of the know-how and be, it is noted that the measurement tools used did not involve, for the most part, the direct observation of the participants, but rather relied on the report of the parents present by the competence 9 which is not well mastered on the part of the educator that can influence the responses. The statistical analysis of the study, emphasizing that the data are related to group averages, from where It would be important to examine the differences between participants to determine the moderating factors and characteristics of the respondents and non-respondents to the program. Thus, the intensity of the intervention differed between the groups. As a result, the greater improvements experienced by the ESDM group cannot be definitively attributed to the content of the intervention, but rather may be the result of the intervention plan.

## References

- Dawson G, Jones EJ, Merkle K, Lowy R, Faja S, et al. (2012) Early Behavioral Intervention is Vismara L, McCormick C, Young G, Nadhan A, Monlux K(2013)Preliminary findings of a telehealth approach to parent training in autism. *Journal of Autism and Developmental Disorders*, 43: 2953-2969.
- Eapen V, Crncec R, Walter A (2013) Clinical outcomes of an early intervention program Vivanti G, Dissanayake C, Zierhut C, Rogers S, Victorial ASELCC Team (2013) Brief Report: Predictors of Outcomes in the Early Start Denver Model Delivered in a Group Setting.
- Fulton E, Eapen V, Crncec R, Walter A, Rogers S (2014) Reducing maladaptive behaviors in preschool-aged children with autism spectrum disorder using the Early Start Denver. *Front Pediatr*, 2:40.
- Vismara L, Young G, Rogers S (2012) Telehealth for expanding the reach of early autism training to parents. *Autism Research and Treatment*, 1-12.
- Vismara L, Colombi C, Rogers S (2009) Can one hour per week of therapy lead to lasting changes in young children with autism?. *Autism*, 13: 93-115.
- Smith T, Iadarola S (2015) Achieving greater generalization of treatment effects in children with autism: Pivotal response training and self-management. *Clinical Psychologist*, 46: 184-191.
- Schreibman L (2005) *The science and fiction of autism*. Cambridge, MA: Harvard University Press.
- Schreibman L, Dawson G, Stahmer A, Landa R, Rogers S, McGee, G., Kasari, C., Ingersoll, B., Kaiser, A., Bruinsma, Y., McNerney, E., Weatherby, A., & Halladay, A. (2015).
- Rogers SJ, Estes A, Lord C, Vismara L, Winter J, Fitzpatrick A, Dawson G (2012) Effects of a brief Early Start Denver Model (ESDM)-based parent intervention on toddlers at risk for autism spectrum disorders: a randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry* 51: 1052-1065.
- Volkmar R Paul A, Klin, D Cohen (Eds), *Handbook of Autism and Developmental Disorders* (3rd ed., Vol. 2, pp. 1055-1086.



- Rogers SJ, Pennington BF (1991) A theoretical approach to the deficits in infantile autism. *Development and Psychopathology*, 3: 137-162.
- Schreibman L, Pierce KL (1993) Naturalistic Developmental Behavioral Interventions: Empirically Validated Treatments for Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 45: 2411-2428.
- Evidence Base Update for Autism Spectrum Disorder. *Journal of Clinical Child & Adolescent Psychology*, 44(6), 897-922. UC Davis Extensions: Continuing and Professional Education. Retrieved April 10, 2016 from <https://extension.ucdavis.edu/course/early-start-denvermodel-introductory-workshop>

### **Copyrights**

Copyright for this article is retained by the author(s), with first publication rights granted to the journal. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).