A Piagetian perspective on singing development

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1. Traditional Piagetian research on musical development

There is no doubt that the genetic epistemology of Piaget is a very powerful theory which has had a tremendous impact on developmental psychology and on various other disciplines (cf. e.g. Steiner, 1978; Kesselring, 1988; Beilin, 1992). In the realm of musical development the two authors, Pflederer Zimmerman (1964, 1966a, 1966b, 1967, 1970, 1981, 1985, Pflederer Zimmerman & Sechrest, 1968, 1979; Webster & Pflederer Zimmerman, 1983) and Serafine (1979, 1980, 1981), have had most influence on the way Piagetian thinking has been applied. As I conclude from their work, they share three assumptions concerning the core elements of Piaget’s theory and their application to music:

1. Applying Piaget’s theory in musical development means investigating its rational aspects, i.e. musical thinking (e.g. Pflederer, 1964, 1966a, 1967; Pflederer Zimmerman, 1993; Serafine, 1981).

2. The development of musical thinking is consistent with Piaget’s formalized theory of the transition from the preoperational stage to the stages of concrete operations and formal thinking. Thus, findings on musical tasks are reconcilable with these stages (e.g. Pflederer, 1964, 1966a, 1967, Serafine, 1979; Webster & Pflederer Zimmerman, 1983).

3. A key concept underlying the Piagetian theory of intellectual growth is that of conservation (e.g. Pflederer, 1964, 1966a, 1967; Pflederer Zimmerman, 1993; Serafine, 1979; Webster & Pflederer Zimmerman, 1983).

Based on these three assumptions, the main body of Piagetian research literature on music has been concerned with the application of the principle of conservation to musical tasks. Most studies have tried to corroborate the evidence of age-related stages concerning conservation in music with the Piagetian stages of cognitive development.

The principle of conservation can be illustrated by the following well-known phenomenon: Two glasses containing equal amounts of water are poured into a different shaped vessel. The quantity is conserved in the face of irrelevant changes in shape. Essentially, conservation refers to the

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ability to retain an invariant quantity in spite of variations in its appearance.

Children at the preoperational stage are easily misled in their judgements by perceptually more salient but irrelevant features, in this case the size of the glass. Their observed failure to conserve quantity led to a veritable avalanche of studies to verify the phenomenon.

"Piaget's study of the conservation of quantity (number, mass, weight, length, area, etc.) turned out to be among the most visible, engaging, and provocative of his many experiments." (Beilin, 1992, p. 198).

In music such conservation tasks include, for example, conservation of melody with change in tempo, accompaniment, harmony, instruments, mode, etc. In these tasks, children are asked to compare each presented pattern to a model and indicate on a response form whether the example was the same or different from the model pattern. Generally, these studies show that task performance tends to be positively related to age (cf. e.g. Pflederer Zimmerman, 1983, 1986).

The existence of conservation as a phenomenon in music (or properly said, the experience of invariant phenomena in music) is given by the fact that there are deliberate compositional techniques that suggest conservation-like rules. For instance, modulating, augmenting, reducing or reversing a theme in a certain way constitutes a musical genre like a fugue or a variation.

In the present context, two critical questions arise about the claim that this phenomenon can be interpreted from a Piagetian perspective. i) What status is to be assigned to the concept of conservation within Piaget's theory generally? ii) What do the findings on an age-dependent improvement in performance on musical conservation tasks imply for a theory of musical development?

As will be argued in the following, most previous work done in music psychology in the name of Piagetian theory has, in fact, had only little to do with the basic assumptions of the genetic epistemology of Piaget. This is due to the fact that these studies have tended to isolate and simplify a few concepts for experimental purposes and have failed to take into account the theory as a whole (cf. Stadler Elmer & Zulauf-Bernard, 1995). This observation accords with Beilin's (1992) comment about the countless studies on conservation in child development generally where he says that these have led to the formation of a rather distorted picture of Piaget's theory that has hindered a full appreciation of the theory's potential contribution to psychology.

2. Objections to the main approach and an alternative position

1.) Piaget was not interested in cognition or thinking per se, but rather in its genesis from actions to internalized thoughts. One of his central aims was to understand and explain the continual emergence of new actions
and cognition and its progressive adaptation to reality. He pointed out the close relationship between action and thought and demonstrated that action is the basis of every higher conceptual form of cognition.

Although it is not possible to explain this theory in detail here (see e.g. Fetz, 1988; Furth, 1972; Kesselring, 1988; Piaget, 1983; Seiler, 1991), it is necessary to recall briefly the most important theoretical concepts. They are represented in the term *structure-genetic constructivism*, another name for the theory stemming from Piaget’s work (cf. e.g. Edelstein & Hoppe-Graff, 1993; Seiler, 1991, 1994). This approach is adopted here principally because it stands for a comprehensive and modified reinterpretation of the theory Piaget developed during his lifetime.

Piaget’s interest in action focused on its underlying *structure* in the sense of its organization as a kind of unit, order, or Gestalt (for details see e.g. Seiler, 1994). Cognition takes place through these structures which are inherent in action, perception, and thinking and which always, through their nature, include motivational and emotional aspects. The structures are adaptively modified or *constructed* by means of assimilation and accommodation while proceeding towards a temporary and hence dynamic *equilibrium* among the structures themselves in interaction with the socio-cultural environment. The concept of *construction* implies that there are actual processes and long lasting sequences leading from qualitatively less adapted states to better adapted ones. It was essentially with this perspective on the genesis of cognitive structures that Piaget’s approach differed from traditional epistemology and so became relevant to psychology.

For an application of the structure-genetic constructivism approach or Piagetian thinking to the realm of music, I propose looking at the ontogenetical roots and examining the early sensorimotor actions involved in the initial process of constructing musical structures. Human subjects initially experience music through such actions as listening, moving, and vocalizing. Hence, I suggest considering the following questions and assumptions:

How do early premusical and musical actions develop into such highly organized actions as comprehending, performing, aesthetically evaluating, and composing music according to the principles and norms of a specific culture? Structure-genetic constructivism implies that early premusical actions are internalized and reorganized. They then serve as musical structures in experiencing, perceiving, interpreting, and producing music. What are these processes which enable us to learn the rules of our musical system? Can we even identify an invariable sequence of qualitative stages? What conditions are necessary to progress from one qualitative level to a next higher one? How do children participate in their society’s socio-cultural practices and, in doing so, make use of whatever implicit or explicit instruction is available? And, seen from the other side, how do the experts guide the novices’ actions?

2.) Although Piaget’s invariable stages of thinking development might be the best known part of his theory (together with the principle of conservation), the stage-model is not central to the theory (cf. e.g. Schmid-
A Piagetian perspective on singing development

Schönbein, 1989a; Seiler & Hoppe-Graff, 1989). Further, the stages cannot be generalized beyond the logicomathematical realm (cf. e.g. Piaget, 1984). Piaget’s developmental model is essentially a process-model aiming at understanding the creation of new structures. Whilst he emphasizes the continuity of the step-by-step process of building new structures by equilibrating previous ones, he uses the concept of stage or period for a rather ‘unnatural subdivision’ (1984, p. 46) of developmental continuity for heuristic reasons. For this reason the three famous stages of cognitive development (sensorimotor period, period of concrete operations, and period of formal operations) involve only the major developmental structures (cf. e.g. Piaget, 1983). In his later work, he moved towards abandoning the notion of stage, mainly because it had the misleading connotation of static development rather than of continuous dynamic change (cf. Beilin, 1989). Thus, the notion of stage within Piaget’s theory should be seen in a subordinate position to the concept of structure (e.g. Seiler & Hoppe-Graff, 1989). And it goes almost without saying that the stages are not intended to be associated with chronological age, although age is sometimes used in a broad sense to provide orientation.

From this discussion, it follows that Piaget’s outlined cognitive stages cannot simply be transferred lock, stock and barrel to another domain such as music. Just two arguments are given below to support this objection to the approach usually adopted in Piagetian research on music.

i) Even within the Piagetian tradition, an overall generalization of the cognitive stages has been questioned. Already in the early seventies Seiler (1973), a highly respected Piagetian scholar, introduced the concept of domain specificity: He doubted whether the fact that an individual was capable of formal thinking in one domain meant that this quality was then necessarily present in all domains. Domain specificity means that certain qualities of thinking developed in a specific domain do not automatically generalize beyond this domain.

ii) This concept of domain specificity challenges the presumed validity of Piaget’s stages for the development of musical abilities because it requires the specific nature of music to be taken into account. The cognitive stages delineated by Piaget describe and explain the genesis of logical and mathematical thinking. In this domain, thinking at its most abstract highest level is necessary. Such thinking is in the form of abstract and flexible thought within complex systems which follow context-independent, enduring, and almost universally valid laws or rules. As far as the phenomenon of conservation of quantity is concerned, it serves as just one among many other characteristics of the transition in logical thinking from the preoperational to the concrete operational stage. It has the advantage of making the compensatory mechanisms apparent. For Piaget it offered a particularly favourable opportunity to see the equilibrium at work.

The logicomathematical domain which Piaget liked to study stands, in some ways, in complete contrast to music. Music expresses, subjectively or collectively, aesthetic sensations within a given cultural system. This musi-
The cultural system has rules that govern the temporal organization of sounds at various levels. These rules are culturally dependent and some vary according to the era, social subgroup, region, occasion, etc., because they are not rigid, but rather social conventions mostly implicit for musical practices. Of course, we can rationally think in music and even apply mathematical tools for analyzing various aspects. But this is not the essential part of what we generally mean by the term ‘music’.

Music always includes the bodily experience of organized sounds through listening, moving, and performing. There are involved emotions. The social or collective participation in these activities conveys cultural meaning of a specific nature that cannot be replaced by another expressive means or semiotic system. As such, music has developed over time and become a socio-cultural means (or ‘tool’, see Wygotsky, 1976) for expressing and eliciting emotion and meaning on a collective as well as individual level.

The specific nature of music appears, therefore, to be closer to language than to logic and mathematics because both music and language are semiotic systems whose acquisition necessarily requires the sensorimotor coordination of vocal sounds and the active and adaptive participation in the individual’s surrounding socio-cultural linguistic and musical practices.

As music is conveyed and transformed from one generation to the next, its instruction and acquisition are essentially determined by social interaction and may hence be seen as a co-construction that takes place in a specific socio-cultural context.

From this discussion I conclude that if we want to understand and explain how musical abilities evolve, we cannot simply isolate certain concepts of Piaget’s abstract theory without understanding its core assumptions with respect to genetic epistemology and without considering the nature of music as a specific semiotic system. Moreover, adopting a Piagetian perspective does not mean one has to try to corroborate stage-like or even age-dependent development, but rather one is free to concentrate on the psychological (micro- or macro-) processes of creating new actions and thoughts.

3. Singing development from a Piagetian perspective

3.1. Theoretical considerations

There are several reasons for emphasizing the crucial importance of singing in musical development and education. Firstly, singing is universal to all children. From very early on in life the human voice is able to structure sounds and to express and elicit affection and emotion. Ontogenetically, a child’s vocal expression gradually adapts to the language and the music of the surrounding social culture. The infant’s vocalizations are important premusical actions that precede later musical constructions as is the case
for language (cf. e.g. Papousek, 1994). At an early stage in vocal development, prosodic and melodic vocal expressions are indistinguishable. In early childhood or until a child starts to learn an instrument, singing is the most important activity for producing melodies that, in normal cases, gradually approximate the rules of her or his culture’s music system.

Singing, even in its elementary form, already encompasses all basic musical components, that is the organization of the articulated sound’s pitches (qualities of produced sounds, pitch categories, intervals) and its timing (phrases, length, pulses, stresses, tempo, rhythm), with the optional use of speech sounds (phonemes, syllables, words). By the manner in which a child expresses herself melodically, she implicitly reveals her cognitive understanding of musical rules. This understanding is not at all conscious. More explicit reflection about musical activities and about cultural rules occur only later in musical development when other representational means such as symbolic notation or linguistic concepts can be applied to them.

Singing is an adaptive and constructive process. Thus, it is unlikely that the vocalized musical structures should be determined exclusively by internal factors that would provide the musical harmonics (overtones) as part of an innate and universal musical program in our brains (as is claimed e.g. by Bernstein, 1976), analogous to Chomsky’s ‘Language Acquisition Device’ (1965). Rather, the already existing biological structures constitute the necessary basis for building more differentiated and integrated structures. This gradual process of constructing vocal musical sounds is neither wholly predetermined by biological factors nor is it accidental, but happens in a continuous flow of social interactions when intuitive and deliberate instruction in music making takes place. By means of continuous assimilation and accommodation processes, the child’s sound organization is slowly adapted to its society’s conventions for communicating and expressing sensation and emotion. Socially shared musical activities are co-constructive, and I consider especially its emotional quality to be crucial to its development. Every musical experience is accompanied by its own emotional quality. This emotional quality affects the evaluation process in that it can promote or impede the dynamics of further constructions. Besides these socially shared musical activities, which represent the more external conditions of musical development, I would like to emphasize the more internal dynamics of musical constructions.

Referring to Fetz (1981, 1982) and his extension of Piaget’s genetic epistemology to the arts, I distinguish two different types of singing which I consider to be relevant to understanding the internal mechanisms of development. The first concerns the reproduction of whole songs or fragments by immediate or delayed imitation of given song-models. In this activity, adaptation, or more specifically accommodation, in Piaget’s terminology, to the conditions and demands of the situation dominates.

The second type of singing consists of spontaneous improvising or inventing. In this action the child is guided by her sensations, emotions, and
previously elaborated musical structures developed in other situations. In Piaget’s words, this involves assimilation, i.e. the integration of external elements into the individual’s evolving or completed structures.

These two singing activities are functionally interdependent inasmuch as their underlying structures can be transferred from one context to others. Theoretically this can be describe as follows: In imitating a given song model, the child reactualizes acquired structures, or in other words, she vocally matches the song-model as far as the structures permit. The more elaborate the musical structures and transforming strategies available, the better the approximation to the rules of the model. Thus, imitation is a reorganization of existing structures and their transformation in order to accommodate to given requirements.

Spontaneous improvisation or invention can be characterized as playful, free, and relaxed singing that typically accompanies other activities. In this process, musical structures which are particularly impressive, intrusive, easily memorable, or emotionally attractive to an individual are playfully reactualized and reorganized. The notion of a haunting melody is indicative of one aspect of this process.

The extent to which a young child freely vocalizes and sings while playing, a predominantly assimilative activity, again affects her ability to use her favorite structures to accommodate to a given context. High activity in one of these singing activities affects the other one, and vice versa. How does this process work in detail? How does an individual child organize her singing activities, for instance in learning a new song?

3.2. Song acquisition process

Before describing the empirical data, I would like to briefly comment on one account of song acquisition popular in the recent literature (for an overview see Stadler Elmer, 1996a, 1996b).

According to Hargreaves (1986), most writers on song learning agree that, generally, words are learned first, followed by rhythm, contour, and intervals in that order. There are several objections to this postulated sequence where words dominate over melody. First, studies of early infant vocalization show that the production of prosodic patterns are not convincingly distinguishable from the singing of melodic contours, and that the vocal expression of prosodic and/or melodic features precedes the articulation of words (cf. e.g. Papousek & Papousek, 1981). Second, the song components, words, rhythm, and melody, are interrelated in such a way that they cannot be put in an additive sequence. Moreover, treating these as discrete, any possible meaningful interrelationship between a song’s melody and lyrics is excluded. Even if we use this idea of sequence rather loosely, it still makes the singing process appear to proceed unidirectionally from speaking to singing. Third, case studies by Kelly & Sutton-Smith (1987, n = 3) and Stadler Elmer (1995a, n = 2, see also below) show that
musically active children from musically stimulating homes proceed with their singing from a musical base, whereas the “relatively unmusical” children proceed with words and the incorporated rhythm. A predomination of speechlike vocalization in songsinging would, therefore, be more likely with children with a clear developmental advantage in speaking over singing.

4. Empirical example

In order to explore the psychological processes involved in the emergence of new musical structures in children’s singing, I adopted the methodology of micro-analysis (cf. e.g. Schmid-Schönbein, 1989b). In this, the detailed description of selected behavioral patterns that proceed over periods of time, allows individual children’s song acquisition processes to be reconstructed theoretically and empirically (for details see Stadler Elmer, 1995b).

4.1. Procedure

42 children between the ages of 2;7 and 8;10 years were instructed in learning new songs in natural interactive settings. Either individually or in groups of two or three, the children were shown a book with pictures that semantically corresponded to the songs presented simultaneously and vocally by the researcher. The songs were specially composed to ensure their novelty, and included some unconventional melodic rules deliberately applied. The rules common to all the songs were that they had the same length (4 bars), regular pulses and an even meter, but different intervals and contours. Several sessions were recorded on audio or video tapes with each child. The whole researcher-child interaction was kept as natural as possible for the child. The researcher tried to make the child feel at ease, and to encourage, scaffold, and reinforce the child’s attempts to sing. The micro-analyses of each individual child’s consecutive singing trials encompass detailed verbal protocols about the child’s actions as well as about his or her social interactions. In addition, all analyses of songsinging were carried out with the aid of a computerized pitch analyzer, where the computer yields curves of the fundamental frequency as a function of time (cf. Hess, 1983). In a subsequent step, the acoustical data can be reduced with great accuracy to a limited set of qualitatively different pitch categories (see Table 1). This method has two main advantages over just an auditory analysis using conventional notation. Unlike with conventional musical notation, the pitches’ quality and its position within the frequency continuum can be assessed not only in more detail but also in an objective and reliable manner. In this way, observer bias, such as categorical perception (cf. Siegel & Siegel, 1977) can be ruled out.
A detailed conceptual framework allows several now accessible and simultaneously present parameters to be specified. These, together with analyses of the child's actions and social interactions, provide a rich ‘microscopic’ view of the progressive co-constructive processes involved in joint and solo singing.

In what follows, I take short excerpts from two case studies made so far to illustrate the research, which is still ongoing.

Two boys, 4;5 and 4;7 years of age, were selected according to their high and low achievement levels in vocal pitch matching tasks. Thus, one child (T.) is considered to be an experienced and the other a poor singer (A.).

Here, I focus on these two children’s song acquisition processes just from the initial phase of acquisition of one song to the point where each child had produced two solo versions. Fig. 1 shows the vocally presented model with its deliberately composed unconventional melody. Table 1 contains the list of the symbols used for indicating the various qualities of vocal sounds produced.

**Tab. 1:** The symbols indicate the pitch qualities produced. The height and the position of the symbol indicate the pitch range and the position in the continuum, respectively. Phrases (defined as the utterance during breathing out) are marked by the brackets. The event number indicates the total number of occurrences of this song without differentiating between presentation, joint singing, and solo singing. The arrow (Fig. 3) indicates help by the researcher.

<table>
<thead>
<tr>
<th>Stable and clearly identifiable pitch</th>
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<td>Identifiable pitch, starting with upward or downward micro-glissando</td>
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<tr>
<td>Identifiable pitch, ending with upward or downward micro-glissando</td>
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<tr>
<td>Unidentifiable, fuzzy pitches, upward or downward</td>
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<td>Unidentifiable, fuzzy pitches within context of singing (prolonged vowel), no direction</td>
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<td>Unidentifiable pitches within context of speech (short vowel)</td>
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4.2. Results and discussion

The initial phase of learning a new song begins with listening to its presentation. Here already the two children differed with respect to the onset, quality and quantity of their spontaneous joint and solo singing. T. quietly listened to two vocal presentations, joined in singing correctly the third one and then, shortly afterwards, started his first solo song version (see Fig. 2, event 4). During the following three presentations, he spontaneously joined in singing correctly (events 5 to 7) and then produced his second solo version (see Fig. 3, event 8). Note that the singing of this second solo was interrupted by his demand for further help. When he was given the next single note with its corresponding word by the researcher, he then continued to complete his solo. Later in this process (not presented here), he succeeded in singing the entire new song correctly.

The poor singer’s initial phase consisted of ten song presentations during which he made only one fragmentary attempt at joint singing using a pitch far lower than the presented notes. Thereafter he performed his first solo shown in Figure 4 as event 11. The next song-event occurred as a kind of mixture. A. produced the first two bars and after a short silent break, the researcher finished with the remaining two bars. Then followed A.’s
second solo version depicted as event 13 in Figure 5. Later in this process (also not presented here), A. started to accompany this song’s lyrics with the melody of a well-known song that has a slightly similar beginning. During several consecutive sessions, he failed to approximate the new song melodically and made no attempts to abandon the well-known adopted tune.

As lyrics and melody always imply temporal and metric structures such as grouped stressed and unstressed syllables, the song’s temporal framework appeared to be present already in the initial phases of the two boys’ learning processes. Both children interestingly took over the exact length (in terms of number of notes or syllables) of the presented model as a kind of scaffold. However, the experienced child filled it at first with a partly invented tune and neglected the lyrics while the poor singer filled the temporal scaffold with words and neglected the melody and its subsumed parameters in both initial song versions. Generally, with regard to other temporal parameters, the pulses or beats were regular within phrases, whereas the breaks in-between phrases may vary slightly (this variation is not shown in the figures). The song’s durations or tempi varied in the course of the two processes (again this is not shown in the figures). Child A.’s songs lasted longer on average (mean = 9.7 sec) than child T.’s (mean = 7.9 sec, the model lasts 8.5 sec). Throughout the whole learning
A Piagetian perspective on singing development

Fig. 3: The experienced singer’s second solo version

process, the poor singer’s phrasing consisted of smaller units than those of the experienced singer.

Hence, there was a marked difference between the two boys concerning the musical qualities they were able to express with their voices. A basic level of musical expression is indicated by the quality of the produced pitches (ranging from clear to fuzzy, see symbols in Table 1). Child A.’s singing displayed in Figures 4 and 5 show that he produced the lyrics in a voice that was clearly higher pitched (and louder) than his speaking voice. But most of his vocal sounds’ pitches were unidentifiable and fuzzy, thus were not yet forming more or less stable pitch categories. Only later in this process did he start to alter this voice quality more in the direction of a singing voice. In contrast, the experienced singer T. produced clearly identifiable pitches most of the time.

The next higher level of vocal musical expression builds on the first one and concerns the organization of the pitches in the form of conventional categories (intervals). As long as child A. failed to produce more or less identifiable pitches, there was hardly any higher order of melodic organization in his way of producing sounds. Since only the lyrics he reproduced corresponded to the singing conventions modelled by the researcher, we can say that his way of singing a tune remained idiosyncratic in the sense
it was still far from the rules inherent in the conventional practice of singing. He had not yet acquired the structures permitting him to imitate a given tune and so, his attempts at producing musical sounds were so unconventional that it was impossible for others to memorize or reproduce them.

Later in this learning process, A. was encouraged to use his singing voice whereupon he started to use the already acquired tune of a traditional song. He accompanied the lyrics of the presented song with that adopted melody. Thereby, he gradually changed the vocal pitch qualities towards singing but not, as I have described above, towards the presented melody. The slight similarity between the beginnings of the two tunes (that presented and that adopted) seemed to make him ignore the rest of the melody. During several sessions, he persisted in sticking to his adopted tune and made no attempt to approximate the presented one.

The figures for child T.’s vocal pitch organization (Fig. 2 and 3) show that the pitch intervals between notes approximated the conventional interval categories. The computer analysis, however, allowed deviations
which would hardly have been perceived otherwise to be visualized. What is most striking about this child’s pitch organization is the fact that in both versions he approximated the structure of a tonic triad (do, mi, so), although this was not given in the song model presented. He kept on using this melodic structure for a while, sometimes even more clearly, until he succeeded in abandoning it and taking over the presented melody. His way of melodically structuring a new song with the tonic triad suggests he had some cognitive knowledge of conventions for building melodies.

Besides these salient melodic features, the two boys also differed in how they made use of the song presentation. Whilst the experienced child spontaneously joined in with the presenter’s singing and used this activity as a scaffolding, the poor singer’s rare attempts at joint singing always failed to approximate the presented notes.
The selection of the two boys on the basis of their pitch matching abilities suggests perceptual qualitative differences between their singing. The micro-analyses presented of their initial phases in learning a new song provides more precise insights into the reasons for the perceived differences and their different approaches to solving the problem posed. To summarize, their different strategies mainly concern: the quality and quantity of their joint singing and the extent to which they used it as a scaffolding in learning the song, the quality of the vocally produced musical sounds, and their organization on a higher melodical level. For both of them, the song's temporal framework (length of notes or syllables with their metric pattern) served as a basic scaffold, but the experienced singer began by filling in a melody, while the poor singer reproduced the lyrics.

The experienced singer was more advanced in his musical development and this led him to use differentiated musical structures to such an extent that, even though he accommodated new experiences only slowly by integrating those into his already acquired assimilation structures, he complied with musical conventions. The less differentiated musical structures of the poor singer were highlighted by his persistence in assimilating the lyrics with their incorporated temporal framework at the expense of the melody. He did not have enough elaborated assimilation-structures to accommodate a given tune according to applied conventional norms.

These short excerpts from the initial phases of two song learning processes provide an example for a process-oriented method that is Piagetian in its approach. The focus is on individual changes at a micro-analytic level and accounting for such social-interactional (or instructional) aspects such as how the researcher provides the scaffolding and modelling of a song. This allows an improved understanding of developmental changes by following the course of actual adaptive actions and their underlying structures. In this way it is possible to conceptualize developmental change on a step-by-step basis, provided that the relevant theoretical features and components have been clarified previously and made accessible at the empirical level. After assessing the individual processes micro-analytically, the next research step will consist of identifying regularities that relate to a developmental sequence at a more abstract level.

5. Conclusion

In this paper I have taken a critical approach to the theoretical implications of the widely used paradigm of conservation which has all too often been unreflectively invoked in the literature. Although conservation-like or invariant phenomena exist in music, the concept of conservation refers to a specific ability and as such has only a minor status within Piaget’s theory. It is relevant to the transition from the preoperational to the concrete operational stage where it stands for an easy accessible phenomenon for demonstrating the mechanisms of equilibrium. The great attraction of
A Piagetian perspective on singing development

the concept of conservation in research into music development and other domains seems to be largely due to its counterintuitive simplicity. A further misuse of Piaget’s theory results from a misinterpretation of the concept of stage as age-related and static. Together, I maintain, these two misunderstandings have provided a misguided basis for research in the Piagetian tradition. Although Piaget’s theory no longer appears to be as fashionable as it used to be in the seventies, it still has an extraordinary influence on psychology. According to Beilin (1989, 1992), this theory is still being further developed without abandoning most of the core assumptions of the original theory. For him “… it is more than a theory: It is a research program on a vast scale.” (1992, p. 191). Thus, the field is still open for new discoveries and for developing a variety of new paradigms. This paper on singing development is intended as just one among many possible contributions to this enormous field.

Abstract

The purpose of this paper is twofold. First, it briefly characterizes how Piaget’s theory has been mainly applied in music psychology and education to date. After discussing the major shortcomings of this approach, the core elements of the theory as applied to music are re-evaluated. Second, a new theoretical approach is proposed and elaborated in more detail with respect to the development of singing. The focus on singing is motivated by the fact that it is an elementary and universal means of expressing the basic musical parameters, namely the timing of pitches, from early on in ontogeny. Finally, the delineated approach is exemplified with an excerpt from the initial phase of song acquisition of two pre-school children.

References


A Piagetian perspective on singing development


