The problem of identifying the channel code from a received sequence of noise-affected codewords is known as the blind reconstruction of channel codes. Blind reconstruction of channel codes is an important problem in military surveillance applications to identify the channel code used by an adversary. In this paper, we consider the problem of the blind reconstruction of the binary cyclic codes of unknown length from an unsynchronized bitstream (i.e., when the location of codeword boundaries is not known). For the blind reconstruction of cyclic codes, it is sufficient to identify the correct synchronization, the length, and the factors of the generator polynomial of the code. Toward this, we study the distribution of the syndromes (remainders) of the received polynomials with respect to a candidate factor of the generator polynomial. We prove that the probability of zero syndrome is maximum when all the parameters are correct. Using this result, the problem of the blind reconstruction of cyclic codes is formulated and solved as a hypothesis testing problem.